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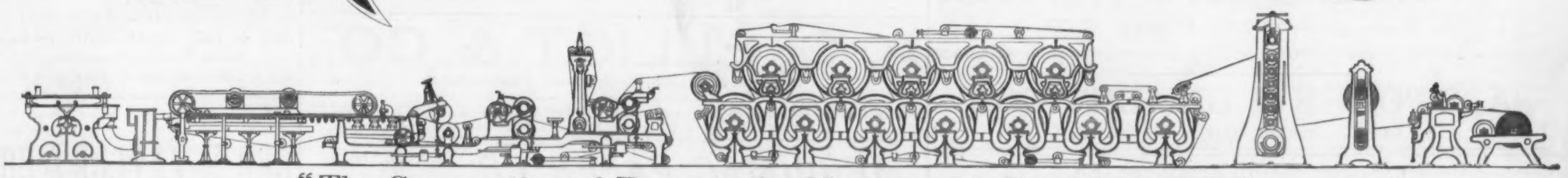


"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIV.—NO. 15. NEW YORK, APRIL 13, 1895. WHOLE NUMBER 1093.

Trade Topics.

Hydraulic Power Transmission.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By W. H. Weston.

Hydraulic power transmission offers such advantages in the way of construction and effective operation that it has no superior, and for many positions it is far better than any other method of transmitting power. One great advantage about it is reliability, there being no method of power transmission which is so certain in its working as this. It is usually cheaper in first cost, and in maintenance and operation, and there is practically no danger of accidents. The hundreds of thousands of places where such power is in use, and has been for many years, is the best proof of its efficiency. Long years of experience have brought such power transmission to a high state of development, so that now it can be put in and used to the greatest advantage in a larger number of situations than any other means of power transmission.

Some of the positions of use may be found in elevators and lifts of various kinds, presses for a large variety of purposes, cranes, hoisting gear, &c., and for such positions there is nothing to approach hydraulic power in efficiency, simplicity and economy. It is efficient because it is always ready to work, and does its work with certainty, and is not liable to be inoperative every few days on account of some cranky spell. It is simple because there are no fine or complicated details and all parts are direct acting and strong, and it can be said to be economical because practice has proved it to be so. There are no fast wearing parts, and repairs and renewals are at a minimum. The two elements necessary to successful working are, first, a high initial pressure, and second, a low velocity of flow in the piping and machines wherever the working is in any way reciprocating or intermittent. For a position where a rotary motor is in use continuously, the velocity can be high to advantage, but not in other cases, generally speaking.

The amount of pressure for a system must, of course, vary considerably according to circumstances. For instance, for elevators and machinery of this kind a pressure of 100 or slightly over is a good ordinary one; but for a system where the power is transmitted through a long line, or number of lines, then a pressure of 600 to 800 pounds per square inch is advisable, with a low velocity of flow. This applies to a system where 5 or 10 miles or more of piping are in use. In such a system a high pressure is necessary to offset the low velocity and the consequent small volume. Low velocity is necessary because with high velocity there would be a serious amount of water hammer throughout the piping on account of the intermittent action of the machinery attached to it and the many turns in the lines of piping.

Another point of great importance is that with high pressure and small volume of water the piping can be of small diameter, and consequently be much cheaper in the cost of the iron and also in the work of laying. In regard to the machinery operated, the high pressure is an advantage in the way of allowing small size and space. Motors, &c., to be run by a large volume of water must be necessarily very large and clumsy and occupy much room and be higher in first cost, so that there are many prominent reasons for using high in preference to low pressure wherever it is possible to do so. In fact, hydraulic power transmission could not be employed in a large system as above referred to without high pressure and a low velocity and small volume.

The operation of the rotary motors is invariably easier and much more effective with a high pressure and small volume, and in this way a higher per cent. of efficiency is secured. Rotary motors under a pressure of a few hundred pounds per square inch are the most satisfactory motors ever produced. There is nothing which can begin to approach them for simplicity and perfection of working, and in the matter of attendance there is no occasion for giving time to them, as they will run with practically no attention. It is the same with all hydraulic power machines; the attendance required is very small. This is a point which cannot be claimed for other methods of power transmission, for in most of them there is constant attendance necessary for operating, and for making repairs, which are required every few days.

Pipe lines for heavy pressure can be made easily to stand the work by careful construction. Whether cast or wrought iron is used is a matter of individual choice in many instances, although I think that I should prefer the wrought iron in most situations, but pipe can be made satisfactorily of cast iron.

In making use of the latter, the quality of the iron put into the furnace must be carefully specified and the methods of casting must be the best and most approved for the special purpose. The flanges on such pipe should be at a little distance back from the ends of the pipe, so that a sort of boss will be formed by the pipe outside of the flange.

In this way the pipe is less liable to break through the joints, the piping having much more lateral strength at these points. For very high pressures a packing ring of gutta percha, set in a triangular groove, is advisable. Every pipe should be tested by inspection, and by pressure to a point at least twice that to be used for the working of the system. After laying the pipe a pressure test should be applied occasionally as the work progresses in order to test the joints.

In a line of much length no leakage of any account should occur if the pipe is properly made, and laid in a thorough and practical manner. A very great proportion of the leakage which happens in water and steam piping is caused by shiftless methods and workmanship. If such things were followed up more carefully at the time of construction there would not be one-tenth of the repairs necessary.

Where hydraulic power transmission is used it is ordinarily necessary to have one or more accumulators in connection with the system; on a small plant one is usually sufficient, but where the lines are long or there are many branches, then more than one is essential at each pumping station. For small plants operating one or two machines within a limited area and at a pressure of 100 pounds or so, the accumulator can be a simple tank or reservoir, made of steel, with the upper part filled with air, which acts as a cushion and holds the pressure; but for other purposes it is necessary to have accumulators constructed with long cylinders and rams, with a diameter of 15 to 25 inches, and a stroke of 15 or 20 feet, according to circumstances. The rams must be loaded with stone, slag or brickwork, or any heavy substance, to thereby keep the ram loaded to the desired pressure. Any fluctuation in the volume of water used will be compensated by the travel of the ram accordingly.

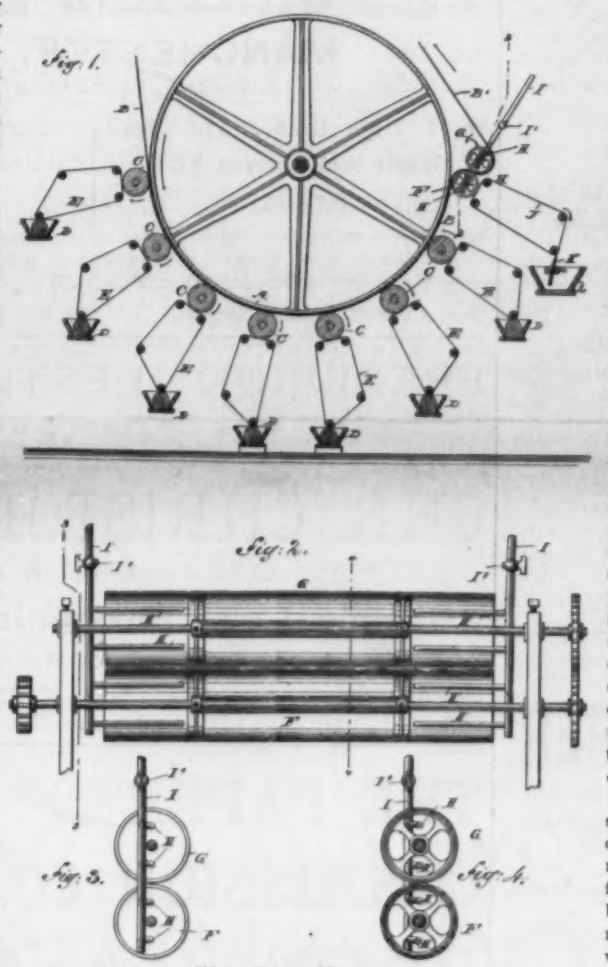
It is a good plan to have the pumps for use in this work double acting and duplex, so as to gain as even and uniform a volume of water pumped as possible. If the plant is very large the pumping machinery is of great importance and should be planned according to the work.

Wall Paper Machine.

An illustration is given of an improved machine for manufacturing wall paper having an embossed face with water color effect.

Figure 1 is a sectional side elevation of the machine; Fig. 2 is an enlarged transverse section of the embossing rollers on the line 2—2 of Fig. 1; Fig. 3 is a sectional side elevation of the same on the line 3—3 of Fig. 2, and Fig. 4 is a similar view of the same on the line 4—4 of Fig. 2.

The machine is provided with an impression cylinder, A, over part of which passes the paper B, to be treated with color and embossing impressions. The paper while on the cylinder is printed on by the color printing rollers C, arranged in the same manner as in the ordinary wall paper many-color printing processes, the color being supplied from a fountain, D, by an apron, E, for each of the rollers. After the paper has passed the last printing roller it passes onto an embossing roller, F, preferably of the same size as the rollers, and formed on its peripheral surface with an engraving corresponding in design to the embossing or relief design to be produced on the paper.



WALL PAPER MACHINE.

The roller F is located close to the cylinder A, so that the paper in passing between the two and onto the roller F receives a first embossing or relief impression, to be finished by the pressure roller G, having a smooth peripheral surface, so that the embossing impression is only made on that face of the paper on which the several rollers C have applied the color. The finished paper B', after leaving the roller G, passes to the usual drying apparatus to receive a final drying prior to being cut up into rolls.

The rollers F and G are internally heated, and for this purpose gas burners, H, are employed, projecting into the hollow rollers F and G, as shown in Figs. 2, 3 and 4, the burners preferably projecting into both ends of the rollers, and each set of burners is connected with a gas supply pipe, I, having a valve, I', for shutting off the gas whenever desired.

Part of the peripheral face of the roller F, not engaged by the paper B, is engaged by an apron, J, which serves as a wiper to clean the engraved face of any paint, color or other matter which may settle in the depressed portions of the peripheral surface of the roller from the paper B. The wiping apron J engages a scraper, K, so that the wipings are removed from the apron to drop into a box, L. The apron J is thus kept clean at all times, and is hence very effective in removing any material which may have settled on the peripheral surface of the roller F.

In order to produce a paper having a non-embossed or flat back and an embossed or relief front face previously printed on, a special paper is used; this is composed of two firmly united layers of pulp, one layer being sized and the other unsized to form an absorbent face adapted to receive successive colors from the rollers C and the final embossing impression between the rollers F and G.

When paper of this description is passed onto the cylinder A and is subjected successively to printing with the various colors supplied by the successively arranged rollers C the absorbent face will become moist, while the back, made of sized pulp, sustains the facing during the process of the printing and prevents undue stretching of the paper while undergoing the process of printing and embossing.

When the paper with the moistened and printed facing finally passes between the heated rollers F and G, then the facing containing the colors is readily pressed into the engraved peripheral surface of the roller F, so as to conform to the design engraved on the roller, thereby embossing the front printed face of the paper, while its back remains smooth in passing over the smooth peripheral face of the other roller G.

By using a paper of this construction, instead of the ordinary colors now used water colors may be employed in the several fountains D, or water colors may be used in connection with the regular pigments to produce a wall paper having an imprinted and embossed face with both water colors and pigments. When the paper passes through the machine, the first roller C is usually employed for moistening the paper with water, starch size or other liquid, and the second roller C is employed for applying the groundwork, and the other rollers for applying the various colors forming the design. Some of the rollers may be used to apply gold, mica, flock, flitters or any other illuminating material, oil, distemper or varnish pigments.

It will be seen that the colors applied to the paper are not dry when it reaches the embossing rollers, the rollers being heated, as described, so that the embossing of the face of the paper with the coating of colors thereon will readily yield to conform to the depressions in the peripheral surface of the roller F, for, if the colors were dry and the paper passed between the rollers F and G, the colors would crack, break off from the paper, and the latter would be destroyed.

When the paper is first embossed, by passing between the cylinder A and the embossing roller F, it is subjected to a moderate heat only, as it is heated only from one side, and therefore is sufficiently moist when it arrives between the two embossing rollers F and G, where it is heated more strongly, as each of the rollers is internally heated.

The rollers F and G are rotated in unison and are driven from suitable driving mechanism of the wall paper machine, preferably by gear wheels, as illustrated in Fig. 2.

Sulphite Fibre Manufacture—VII.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Sanford E. Thompson.

When a cook is to be made, the lower manhole covers are put on. Above these, within the digester, is placed a grating consisting of short lengths of lead pipe laid crosswise upon each other to keep the blocks from covering the valves. Blocks are run in through the upper manhole and leveled off as they fall by men inside of the digester. The blocks, as has been stated in a previous article, are cut square across the grain the whole size of the log, and are 1¼ inches thick. It does not require nearly so long to fill the digester with blocks as is generally supposed. The filling may be done in a little over two hours under proper conditions. The height to which the digester is filled varies somewhat with the quality of wood and the strength of the liquor, but usually the blocks are leveled off about 2 feet below the crown.

When full, the upper covers are put on and steaming is begun. The steam, which should be as wet as possible, is introduced through both of the upper covers. This part of the operation requires from seven to ten hours, according to the character of the wood. The steam is turned on gradually and the temperature is raised to 100° C.; after this temperature is reached, the valves are left open just enough to maintain it within two or three degrees of 100° C. during the entire length of the steaming. The drip passes off through the valves in the lower covers, which are left slightly open.

As soon as the wood has been steamed the required length of time, all valves leading into or out from the digester are closed, and the liquor valve is opened. The cold liquor running in condenses the steam and forms a partial vacuum, drawing in the acid faster than it would otherwise run. It is also claimed that by this method the acid more thoroughly fills the pores of the wood. As soon as the vacuum has disappeared one of the valves on top of the digester is opened to let out the air which the liquor displaces, and the digester is filled so that the level of the liquor is above the crown, and rises into the upper manhole. The steam may be turned on as soon as the liquor covers the leaden coils.

The temperature is raised as fast as possible until it reaches about 60° or 70° C. During this time the liquor is soaking into the wood, and the inlet valve must be opened occasionally to keep the level of the liquor above the crown, at which level it must remain for about six hours, or until the blocks are thoroughly soaked. A portion of the liquor may now be drawn off through the lower valve and pumped back into the storage tank, leaving the surface of the liquor in the digester about 1 foot below the crown. The temperature should be at this time between 60° and 70°.

The reason for the necessity of completely filling the digester with liquor and then drawing off the foot is that if the surface of the liquor is below the crown, the blocks, which are lighter than the liquor, will float. As soon as the temperature rises in the digester, the blocks which are on top, and are therefore dry, will be burned. By the method above described, the blocks are thoroughly soaked before the temperature is high enough to burn them. This object is accomplished in the direct steam process by what is called the cook's "bringing the liquor to the top." During the first two or three hours of a cook in an upright digester a valve on top is occasionally opened, so as to let all air and dry gas out of the digester, and leave it full of liquor. The space is filled by steam and condensed water from the boilers.

To return to our Mitscherlich cook; as soon as the foot of liquor is drawn off, the upper covers are tightly fastened on and all connections are removed. The temperature is raised to about 110° or 112° C. as

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quickly as possible. When this temperature is reached the customary way is to maintain it for several hours, the length of time varying with the quality of pulp desired, and then to raise it. The maximum temperature reached should not exceed 120° or 122° C. If a very fine quality of fibre is desired, the temperature is maintained at or near 112° for more than one-fourth of the total length of the cooking. If time is of more value than quality, the temperature may be raised earlier. The pressure is raised to 45 or 48 pounds and is not allowed to exceed this, gas being blown off through the valve to prevent it.

For determining the point at which to blow off, the ammonia test is used. A small quantity of strong ammonia and water in about equal parts is placed in a test tube and the tube is filled with liquor drawn from the test cock. This is shaken, and the sulphite of lime, which is formed as an earthy precipitate, is allowed to settle out. As the cooking draws toward a close the amount of this precipitate becomes less and its character changes. The time for blowing off is determined by noticing the height of the lime in the tube, the color of the lime, which gradually becomes dark, the manner in which the lime settles, the stickiness of the liquor and the odor of the liquor as it is drawn from the test cock. No one of these characteristics alone is sufficient to determine the completion of a cook. Toward the close of the cooking the pressure is gradually dropped by blowing off gas.

As soon as the test shows the wood to be thoroughly cooked, and the pressure has been sufficiently lowered, the lower valves are opened and the liquor is drained off. These lower valves are then closed and the digester is filled with water. This is necessary both to wash the pulp and also to cool it off sufficiently to allow men to get in to shovel it out. From two to four waters are required. The lower covers are now taken off and the pulp is shoveled out through the lower manholes, when it is ready to run to the wash room.

After the pulp is entirely removed the lime which has collected upon the lead pipes has to be scraped off, or loosened by hammering upon them with a wooden mallet. The collars of the upper manhole, that is, the place at which the brick lining joins the heavy lead lining, are examined for any appearance of a leak, and repaired if necessary.

If the Mitscherlich linings are properly put in at first comparatively few repairs are necessary. Occasionally, say every four to six months, a portion of the lining above the liquor has to be repointed. To do this thoroughly all lime and discolored cement should be chopped from the joints with pointed cold chisels, until the hard, blue Portland cement is reached. This should be wet down and the new cement pressed into the joint with a small trowel. If a leak occurs it can often be stopped by caulking the outside of the shell with a cold chisel, when the deposit of lime will fill the crack made. If the leak is more serious than this it must be repaired before the next cook, even if it is necessary to remove a portion of the lining.

The number of cords of wood which a Mitscherlich digester will hold varies with the diameter of the blocks. When the wood ranges from 5 to 8 inches in diameter the digester will hold about 33 cords of wood. If the wood is as large as 12 or 16 inches diameter it will only hold about 26 cords. About 19,500 gallons of liquor are used for each cooking, and 12 tons of fibre bone dry are produced. For washing the pulp in the digester at least an average of 44,000 gallons of water are required for each cooking.

The quality of the fibre produced by this process will be very uniform if sufficient care is exercised in the cooking and acid making. If the cooking is not continued long enough, or if the temperature is raised too quickly, the pulp may be too hard to break up in the wash room, and there will also be a large amount of waste from uncooked wood. On the other hand, if the wood is cooked too long, the fibre will not be so strong, and a great many small particles of knots or bark will be cooked so soft that they will run through the knot catchers and screens into the finished sheet.

(To be continued).

Correspondence.

PHILADELPHIA.

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, Pa., April 10, 1895.

In our line trade may be said to be "pretty fair." In the last three days I have visited every one of the principal paper firms, and they have all given the same opinion expressed in different words, viz., that business is better up to date than it was last year at this time, but is not what was expected or wanted to be.

Ben Wolf, who is treasurer of the National Metal Edge Box Company, and also a member of the firm of Wolf Brothers, paper and envelopes, will sail for Europe on April 20 on a trip in which business and pleasure both are combined.

The Nescochague Manufacturing Company has had no end of trouble ever since it has been in its present building. New shafting, elevators, floors and partitions have been and are being put in almost daily ever since it took the building. In the cellar a floor was laid some time ago of cheap lumber, which promptly rotted away, and a new one had to be laid. It has kept Mr. Farrell busy for months attending to repairs. The engine was no good and had to be replaced by a new one, and, to bring matters to a climax, a water pipe burst on the third floor a couple of weeks ago and flooded the floors below. A great deal of damage was caused, but the Nescochague folks say that somebody will have to pay for it. The building is owned by an estate, and probably this is one reason why it has so much trouble, the responsibility being divided among a number of heirs.

John Simmons & Sons say that they are doing a very large business so far as the bulk of sales is concerned. Mr. Simmons expressed the situation thusly: "We have never handled as much stock in quantity as now, and have never made as little profit."

T. M. Simpson says that about four weeks ago business took a good turn with him, and he looks for a very fair increase of trade before hot weather sets in.

I find that trade in our line has been very fair for the last four or five weeks. Not that there have been no growlers; these gentry show up on all occasions. If they make $100 this week they are full of regrets for lost opportunities to make $125 or $150, like the clothing merchant who smote his breast when a customer handed him out $20 for a $10 suit: "Mein Gott!" he said, "he is so soft dot I could haf got $20 for dot suit!"

E. Levinson has a unique sort of store around the corner on Market street from Decatur street. He catches a good deal of retail trade and a very fair proportion of the wholesale business. He sells paper, bags and twine. He does not feel very happy about business, as he says he expected quite a boom this spring, but it has not materialized.

The annual meeting of the Typothetæ of Philadelphia will be held on Saturday evening, April 20, at 7 o'clock, in their headquarters, No. 1010 Walnut street. The meeting will be called at 7 o'clock, sharp, on account of the informal dinner (not full dress) at 8:30 o'clock on that evening.

Dinner cards are $1 each, to be had on application to the secretary.

John W. Wallace is the secretary. He is the Wallace of Lineweaver & Wallace, one of our best known printing firms.

It is likely that the Typothetæ Album will be shown on this occasion; it will contain the portraits of most of the prominent printers of this section.

Recent visitors in the trade are: Messrs. Pulsifer, of the Oakland Paper Company; Chapin, of the Ticonderoga Paper Company; Judd, of the Waukegan Paper Company; Campbell, of the Easton, May & Robbins Paper Company; Weight, of the American Roll Paper Company; Stanley, of Case Brothers; Ramage, of the James Ramage Paper Company; Beebe, of the Beebe & Holbrook Company; Dikeman, of Eaton, Dikeman & Co., and James Symington, Beltonford Paper Mills; Ph. C. Powers, Connecticut River Paper Co.; F. Carpenter, Boston, Mass.; Chas. Barden, Crane Brothers; Orrin F. Smith, New York; H. P. Sears, Holyoke, Mass.; D. S. Pillsbury, New York; Wm. E. Conrow, New York; A. Blandy, American Wood Board Company; John E. Waller, Hart Lot Paper Company; John Wilson, Cumberland Paper Company; C. C. Benton, Lee, Mass.; Arthur Crane, Westfield, Mass.; Chas. O. Woods, L. L. Brown Paper Company.

There seems to be but little doing in the chemical market. Spot bleach is in better demand, and somewhat higher in price, quotations being 1⅞@2c. per pound. In soda ash quotations remain about the same; 48 per cent. caustic ash, 1½c.; 58 per cent. alkali, 90@95c. for 48 per cent. Business is limited to active requirements.

Price of rags and paper stock are as follows: Whites, 2⅞@3c.; blues, 1⅛@1¼c.; colors, free of blacks, ¾@⅞c.; blacks, ¼c.; No. 1 white shavings, soft, 1⅝@1¾c.; No. 1 white shavings, hard, 2¼@2⅜c.; No. 2 shavings, ⅞@1c.; mixed shavings, ¼@⅜c.; news, 45@50c.; ledger paper, 2@2⅛c.; book stock, ¾@⅞c.

FOUNTAIN PEN.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., April 11, 1895.

Since the syndicate was settled there seems to be very much increased activity all along the line, and new things are coming to light continually which have been in contemplation, but have been held back until the result should be known. Before going into some of them in detail, it may be well to say another word in the matter which has previously been referred to in these columns, regarding the prospect of a combination being formed in this valley among the news paper manufacturers. Your correspondent has said that there were indications of something of this kind, and it may be said in this letter that these indications seem to grow stronger and stronger as time advances, although as far as known there is nothing as yet definitely settled upon as a method of procedure. It seems to be generally agreed, however, that if the proposed Eastern combination is carried out there will have to be some similar arrangement made here in the interests of self-preservation. Although nothing is at present given out in an authoritative way, it is understood that the manufacturers generally have the matter under advisement, and that it is not improbable that an arrangement will be entered into before long which will be to the advantage of all concerned.

Going back to the matter of improvements, it may be said that the firm of O'Keefe & Orbison, of this city, is now preparing plans for an important improvement to be made this season by the Green Bay and Mississippi Canal Company on its property in the neighborhood of the third dam in Appleton. On the left bank of the river at this point the flow of water from the tail races of the mills at present is much impeded by the bents of a railroad trestle work that now reach down into the water. The company proposes to remove this trestle and set the tracks about 100 feet further out into the river, where they will run over the top of an embankment made by erecting two walls of masonry about 20 feet apart and filling in the space between them. The tail races will be blasted out for a distance of 600 feet and made perfect in every respect. On the right bank of the river also considerable work will be done. The guard lock of the Telulah water power canal will be removed further down the canal and the head of the canal dredged out in order to admit more water. The Manufacturing Investment Company, which now draws its water for power purposes from the navigation canal, will dig a canal from its power house to the Telulah canal so that it will be able to use water from either or both canals as it may elect. Several iron bridges will be put in spanning these waterways, and the appearance of the district will be considerably changed for the better. The improvements will cost a large amount of money.

In his last letter your correspondent spoke at some length about the new steam engines which are to be put in the mills on the river this season. Most of these engines have already been ordered, and as time goes on reports come in that there are to be still others arranged for in the near future. It is stated that some of the largest users of steam power in Neenah are figuring upon compounding their present engines in order to increase their economy and effectiveness and that more engines are probable for the mills at Appleton and further down the river. It is coming to such a pass that if wood pulp is to be made on this river it will take all of the water power there is to do it, and the paper making machinery must be actuated by steam. The water in the river continues at the same low stage which has ruled for so long, and while there have been some rains of late they have not been copious enough to do anything toward raising the level of the lake. All of the manufacturers the other day received a circular letter from the War Department saying something about keeping the water up to the crests of the dams. At this time last year the water was going over the tops of the dams, but now it is 3 feet below them. If no water at all was used for power it would be a long time before the level would be brought up to the point asked for by the Government.

A good many changes and improvements are now being made at the mill of the Gilbert Paper Company in Menasha which will considerably increase its effectiveness. One of the three steam engines used has been turned around, and will be used to drive the two paper machines with a rope transmission. A new stock of supercalenders is also being put in, which will considerably increase the capacity of the mill, and the plant in every department is being given an overhauling which will contribute to the excellence of its work.

It is expected that the mill of the Howard Paper Company, of Menasha, which has been undergoing rebuilding, will be ready to start up again about the 15th of the present month.

The Fox River Paper Company, of this city, is contemplating widening the paper machine in its Lincoln mill. The machine at present is 68 inches in width, and it is proposed to put on 8 inches more. Figures for doing the work have been submitted by the Beloit Iron Works, the original builders of the machine, and while the order for going ahead with the work has not yet been given it is thought that the improvement will be definitely decided upon.

Two new stacks of calenders are to be

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Importers and Manufacturers' Agents.
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THE UNITED ALKALI CO., Ltd., of Great Britain, BLEACHING POWDER.
FOR THE SALE OF THEIR VARIOUS BRANDS OF

added to the equipment of the Atlas Paper Company's mill in this city, and the foundations for them are now being constructed.

At the municipal election in this city last week Superintendent Peter Thom, of the Kimberly & Clark Company, was re-elected Mayor of Appleton. In the city of Neenah, much to the regret of manufacturers and business men generally, J. A. Kimberly, of the Kimberly & Clark Company, was defeated for the mayoralty.

Leverett H. Waldo, formerly superintendent of the Appleton Woolen Mills, and well known in the trade generally, died at his home in this city at an early hour last Saturday morning, leaving a widow and six children. He had been ill for several weeks with erysipelas and Bright's disease. The funeral occurred last Sunday. Mr. Waldo was born in Arcade, N. Y., March 30, 1841, and learned the woolen business, being employed in the mills in that city. During the war he served in the New York Dragoons and afterward returned to Arcade, where he became superintendent of the mills. Later he removed to Baraboo, in this State, where he remained for ten years, when he came to Appleton in 1880, where he ever since resided, being superintendent of the Appleton Woolen Mills until a year ago.

J. H. McCormick, of New York, arrived in town last week and has been calling on the trade here.

S. W. Hamilton, of Chicago, has been a recent visitor to the valley.

William Solomon, of New York, is making his first trip to this valley.

General Manager Taylor, of the Pulp Wood Supply Company, has just returned from an extended trip to Michigan.

FOX RIVER.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, April 11, 1895.

Trade conditions in the valley have improved somewhat during the past ten days. Prior to this time trade was spasmodic throughout, with an occasional busy, rushing day intermixed with the straggling ones. If there really is such a thing as spring business in paper and novelty manufacturing it is now in evidence, with brighter prospects for an immediate future.

In the case of the Middletown Hydraulic Company against the Tytus-Gardner Paper Manufacturing Company, of Middletown, the defendant has filed an answer. Several denials to the allegations are made, and as it was at first predicted, the suit was only the begininning of a case in which the validity of the hydraulic leases will be tested. There will likely be a big legal squabble, and someone has asserted that courts, judges and attorneys will be engrossed with the litigation for years. This statement may be somewhat strained.

One of the denials is to the effect that the company does not draw water wrongfully from the hydraulic race; that plaintiff is not the owner of the real estate described in the petition, and avers that the only right plaintiff has is an easement to pass the water of plaintiff's hydraulic race along Water street and where it has constructed a certain artificial waterway along said street; the defendants, of course, claim that the injunction granted to the Middletown Hydraulic Company was wrongfully obtained, and that the plaintiff is not entitled to any relief under either of the causes of action. The Tytus-Gardner Company prays for a dissolution of the injunction, a dismissal of plaintiff's petition and for other relief, to be determined by the courts.

The Hydraulic Company says that the defendant owns certain real estate and operates a large manufacturing paper plant thereon, and that without any right whatever it has placed a number of pipes extending from its premises to the hydraulic, through which it wrongfully draws water for the purpose of filling its boilers, creating steam, &c., and discharges wastage, offal and other injurious substances into the waterway. It is likewise asserted that the paper company has constructed a ditch or water drain through which to discharge water and impurities into the raceway; also a large artificial waterway over certain of plaintiff's real estate, from which it supplies water for power and other purposes.

It is probable the result of this suit may involve others, or at least make a test which may prove of deep interest to paper manufacturing consumers above and below Middletown.

Captain Morris in informally discussing the Miami and Erie Canal question the other day was doubtless little aware that he was imparting so much valuable information. The captain a long time ago, it will be remembered, prepared an estimate of expenses after a thorough investigation. Said he: "Paper manufacturers should awake to the emergency—one which promises so much to those who will exact a little performance. The Miami and Erie Canal is the only route possessing all of the advantages for a great ship canal, having an abundance of flowing water to feed such a canal, and outlets of sufficient capacity for all lake and river commerce. These are the most important points of all great canals, and a waterway lacking any one of these points cannot sustain itself. Such canals are gradually passing out of existence, as the expenses are greater than the revenue.

"The Miami and Erie Canal also has its reservoir system established and now needs only to enlarge it; its right of way is nearly all secured, and it has the best of stone and oak timber in abundance upon the route for building locks and other works. It has navigation the entire length of the canal, and feeders to distribute stone, timber and building materials to all points required for the construction of locks, dams, bridges, aqueducts, &c.

"The Erie and Michigan Ship Canal, intersecting the Maumee River at Defiance, would give us an outlet to Toledo, and saves this route 52 miles of canal, and also furnishes an outlet to Chicago and Lake Michigan, thus assuring all of the lumber, iron ore and mineral trade of Lake Superior and water communication to Europe. Should trouble arise between Canada and the United States we would then be prepared to distribute our torpedo and gun boats over the whole chain of lakes. You know that Chicago wants the coal trade of the Ohio River; Toledo wants the Southern trade of the Mississippi and Ohio rivers; Cincinnati and the South want the lumber, iron ore and minerals of Michigan and Lake Superior in return.

"A ship canal of 14 feet draught with a caring capacity of 850 tons, or more, would cost $74,000 per mile, and from Cincinnati to Defiance is 185 miles. Thus the cost would aggregate $13,690,000. The Miami and Erie and the Michigan would form the greatest canal system in America, connecting all cardinal points. The outlet should not be above Cincinnati, as commerce can pass down stream when it cannot be moved up stream."

Dr. W. T. Harris, of Defiance, has been in Hamilton this week endeavoring to interest manufacturers of that place in his plans. His idea has been previously aired in these columns. He is visiting the various cities along the route and has received considerable encouragement.

Miami Valley manufacturers never did consider the so-called Butterworth syndicate in the Fox River Valley of any consequence. Our local paper men believe in performance and not promise. Now that that the deal is declared officially off, what erratic "plunger" will stir the next commercial breeze?

That was certainly a cruel spring jokelet which "Dandy" scribbled in his spicy column concerning the Miami Valley manufacturer and the wideawake salesman. If they had been playing poker circumstances would have been different. I'll gamble that I can point out three or four veteran chip clashers who can "sit" eight nights in a week without suffering the slightest pang of insomnia, and they are equally as competent paper sellers, too. The two arts go hand in hand—a mystery which only the initiated can appreciate.

There were several small blazes in mills down the valley the past week. Only meagre losses were reported.

It was again reported that the body of the late W. J. Aull had been found below Cincinnati this week, but investigation proved the falsity of the rumor. The life insurance policy of $2,500 has been paid to the children.

Ed. B. Weston was in Greenfield, Ind., the greater part of this week. Mr. Weston is a frequent visitor, taking more than an occasional run. The mill is as completely under his personal supervision as his Dayton plant. All repairs at the Indiana mill have been completed, and the plant is in full operation.

The mechanical department of the Hamilton Young Men's Christian Association, at Hamilton, returns thanks to the Black & Clawson Company for two elegantly framed drawings of paper mill machinery for practical use.

Lewis G. Reynolds, of the Crume & Sexton Company, as predicted, was elected a member of the school board, he being the only former member returned, an honor deeply appreciated and especially noteworthy during the present charges of incompetency and mismanagement against the board. Mr. Reynolds refuses to accept the presidency, owing to his frequent absence from the city.

M. V.

WESTERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., April 11, 1895.

The main topic of conversation in the city is the test of the big turbine wheel at the power house of the Niagara Falls Power Company. Ever since the No. 1 wheel was turned last Friday and Saturday the big monster has been kept at it every day.

Probably no one is more pleased with the developments of the wheel than Rudolph Baumann, the expert engineer representing Faesch & Piccard, the designers of the plans from which it was built.

Mr. Baumann is a German, and speaks English brokenly. When asked as to the movement of the turbine he replied that it was perfect. "We are running the wheel now to fit the bearings. You see there may be a little here or a little there on each bearing which needs to be tightened up. We run it slowly at first and gradually increase the speed until it reaches 250 revolutions a minute. We have come from seventeen revolutions a minute now up to 100, which was reached to-day, when the tachometer recorded the velocity. The wheel works splendidly. Every part is perfect, and the adjustment of the bearings is the only thing needed. I would not be afraid to run the turbine up to the 250 revolutions requirement at any moment.

"Has there been any test of the electric generator?"

"Oh, no! The part of the generator riveted to the top of the shaft simply revolves, and no electricity is made. I do not know when they will try it, but not before the switchboard is put in and the connections are made. The electric people are busy now riveting the second dynamo onto the No. 2 wheel, and we will soon start testing that. All three wheels will be tested in the same way."

Mr. Baumann is the inventor of the governor which regulates the speed of the turbines. This device is a wonderful contrivance and has worked to a fine degree on the turbine now being run. So accurate is the governor that it recorded a half of 1 per cent. in variation of the speed on this big 5,000 horse power wheel. Another month and there will be wonderful changes in the power house.

The pulp and paper mills at Lockport are mostly closed down, owing to the water being drawn off the canal this week. Cleaning up and repairs are absorbing the time of the employees.

W. E. T.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., April 11, 1895.

There are no restrictions on the Holyoke mills to-day. The Water Power Company removed them yesterday. It looks as if no restrictions would be necessary for a long time to come.

The water has been rising in the river very rapidly for a number of days and the measurement yesterday showed over seven feet on the dam.

The recent rains and damp, foggy weather have set the water on the hills and in the mountain gorges north of us to running, and it looks as if the records of the past ten years will be equaled if not exceeded.

It is a grand sight to stand near the dam and watch the big volume of water pour over the apron, and hundreds of people have enjoyed the privilege during the past two days.

Between here and Springfield and above us toward Northampton the river has overflowed its banks, covered the low meadows and submerged the neighboring highways. Yet so far no serious damage has been reported.

Some of the mills have been troubled by driftwood which forced its way through the raceways, but men are at work near the head gates with big rakes keeping as much as possible from entering the canals.

Seventy employees of the Deane Steam Pump Company are out on strike, and the works are closed. The strikers include all of the molders and coremakers, and their grievance is that the company has failed to restore the 10 per cent. which was taken from their wages eighteen months ago when business was very dull. The molders now receive from $2.25 to $3.25 a day, and the coremakers $2.

The men claim that they willingly conceded the cut when business was bad, but they say that within six months the business has steadily improved and that the factory has been run nights to keep pace with its orders.

On the other hand the company's officials say that the contracts were all taken on the present basis of wages and that they cannot afford to raise the wages of the men at present.

The company employs 275 men, with a monthly pay roll of $12,000.

The St. Louis company which is to build the big dam is testing samples of cement in the basement of the Water Power Company's building on Canal street. The samples are subjected to tests of one, two and three weeks and the work is being done in a thorough manner.

Business has undergone very little change during the past week.

At present the book mills seem to have the best of what business there is, both as to orders and prices.

The fine writing mills are about as quiet as they have been for some time, and orders are not very numerous. Prices remain unchanged.

Annual meetings are beginning to be held, and here is the return of the Beebe & Holbrook Paper Company: Fixed capital, $150,000; capital paid in, $150,000. Assets—Land and water power, $60,000; buildings, $45,000; machinery, $100,000; cash and debts receivable, $154,187; manufactures and merchandise, $91,288; total, $550,476. Liabilities—Capital stock, $150,000; debts, $37,375; reserve for depreciation, $363,160; total, $550,476.

The Riverside Paper Company started the second machine, measuring 102 inches, in its No. 2 mill yesterday. This makes four machines which the company is now running.

It looks as if Italians will be employed on the construction of the new dam after all. About a dozen sons of "sunny Italy" have arrived and a boarding house has been opened on the South Hadley Falls side of the river.

It is understood that the contractor for the improvement of the Crocker Manufacturing Company's plant will receive $120,000 for his work.

John B. McCormick will make his home in Pennsylvania hereafter.

A contractor who is to build a mill for a local corporation has decided to employ not only union but non-union men on the job. He will need seventy-five or more men and he will secure competent workmen without regard to unionism. The experiment will be watched.

Horace Walters, sixty-eight years old, an employee of the Nonotuck Paper Company for many years, died at his home at South Hadley Falls Monday of diabetes

The Mutual Aid Association of the Holyoke Envelope Mill will have its third annual ball on Monday.

George A. Hart, traveling salesman for the Whiting Paper Company, started on a Western trip on Monday. He will return in about six weeks.

A number of our manufacturers and business men attended the reception to Governor Greenhalge at Westfield last night.

H.

NORTHERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., April 10, 1895.

This is the time of big floods and of logging it down the streams, and the waters are about to exert themselves, as the break-up has come. It was expected to be delayed somewhat, but preparations to bring the pulp wood down are complete. There is a great deal of snow in the woods—almost 3 feet on the level—and some of the old hands think that there will be one of the biggest freshets this spring that the old Black River has ever had. As one man expresses it: When the "circus" is ended pieces of Watertown will be found down at Brownville. The snow this winter has been a great boon to logging interests. There has been plenty of the beautiful since December 23, without even a January thaw, and the old tradition of 100 days straight sleighing handed down by our grandfathers has been verified this winter, and more, too. It is four years since this locality has experienced such a stiff winter, and then it lasted only ninety days.

One logman, P. W. Waite, of Oswegatchie, has 1,500,000 feet, composed mostly of spruce and hemlock logs. W. Glasby, who had charge of the C. R. Remington & Son Company drive, has the pulp timber all ready to send down the river. Other paper and pulp companies have theirs ready to send when the opportune time arrives.

The annual meetings of the stockholders of the International Pulp Company and of the Oswegatchie Electric Light and Power Company were held at Gouverneur last week. The New York Central Railroad provided a special train for the party, which included Col. A. G. Paine and Messrs. Dyer, Rindskopf, Sloat, Bayard and Dimond, all of New York. They voted on a large majority of the stock. The directors elected included H. Walter Webb and Hon. Chauncey M. Depew, George H. Daniels, Edgar Van Etten, all of the New York Central directory; Colonel Paine, W. J. Arkell, T. W. Bayard, Touro Robertson, A. G. Paine, Jr., Thomas L. James, John Manning, D. G. Upton and J. W. Welch.

The directors of the Electric Light and Power Company are H. Walter Webb, Col. A. G. Paine, W. J. Arkell, A. L. McCrea and A. J. Macdonald. These directors met and elected these officers: President, Colonel Paine; treasurer, W. J. Arkell; secretary, Alfred Rindskopf. The New Yorkers went to Hailesboro and inspected the new electric light station just above the place. The works were started up, and the machinery ran very satisfactorily. The gentlemen also went to Talcville, where they inspected the mines and viewed the working of the new air compressing plant used in crushing the talc.

The Harmon Machine Company is reported to be very busy with repair work. It is making a number of changes in the plant of the Great Bend Paper Company

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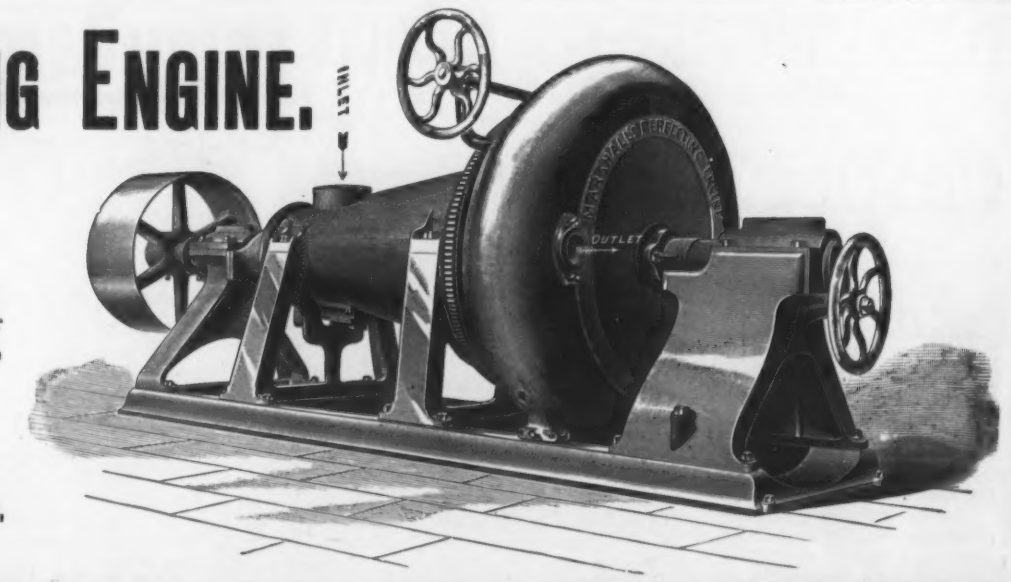

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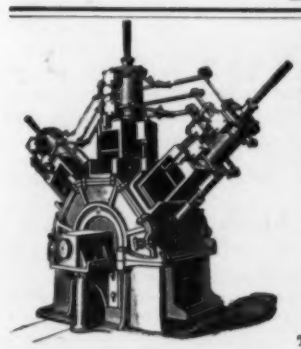
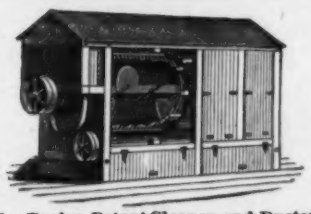
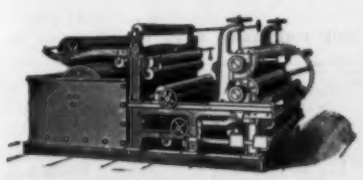
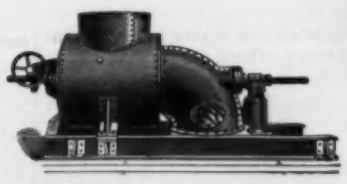




The Taylor Patent Cleaner and Duster.





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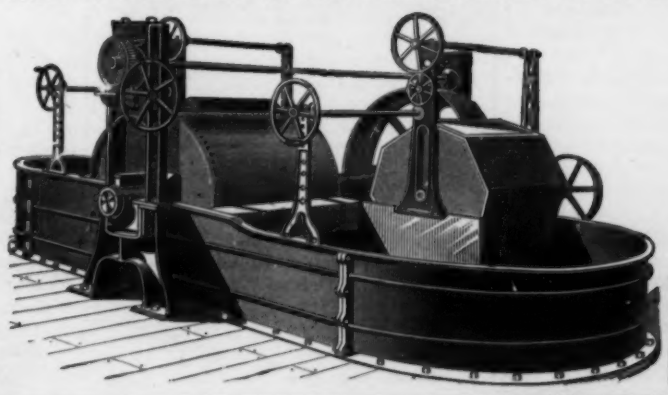

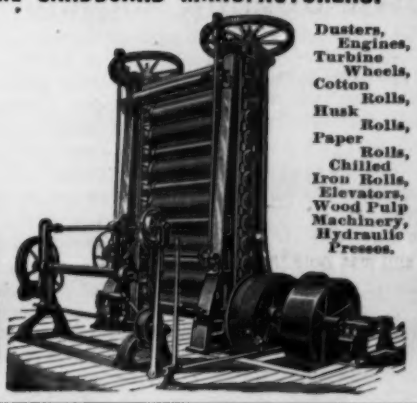

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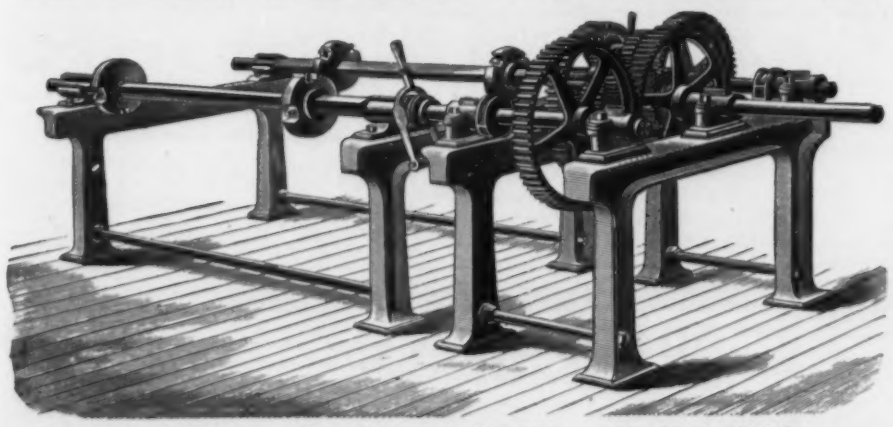

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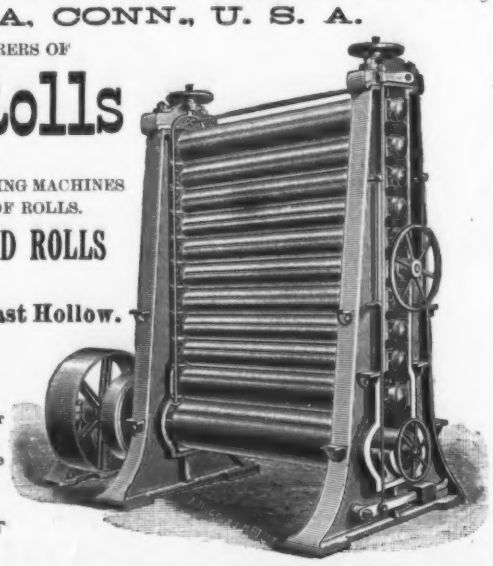

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PART II.

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CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres; growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Resin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; onsein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

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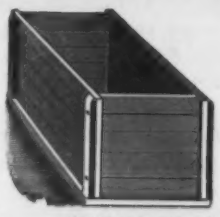

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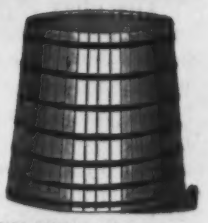

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and is preparing plans for extensive improvements in the beating engine room. The work on the paper mill addition of the Outterson Paper Company is being pushed as rapidly as possible, some of the work being carried on overtime. The structural steel and iron work is being prepared for another building.

The Bagley & Sewall Company is reported to be full of work. Aside from the building over of the machine for the Niagara Falls Paper Company, at Niagara Falls, it is putting together a new machine for the Monroe Felt and Paper Company, of Lawrence, Mass. The company says that it has all of the work it wants, but that prices are off. It is running full time, however, and up to 10 o'clock most nights. There are 160 men on the payroll. The machine for the Lawrence plant will be a 92 inch Fourdrinier. W. E. T.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, April 11, 1895.

One of the big bulletin boards in News Paper Row contained this announcement last Friday: "Paper and Pulp Mills Combine!"

The paper itself gave a half column to scare heads, and another half column to what it supposed to be information concerning the big combination. The article seemed to have been put together by a space writer, and he had so few facts to work on and knew so little concerning the matter that the story was really ridiculous.

It was a good illustration of the old saying, Better not know so much than know so much that is not so.

As everyone in the paper trade knows, an effort is being made to effect a combination among the large news mills of New England and other nearby sections for the purpose of saving the industry from many acknowledged abuses, but how successful the efforts of those interested in the matter have been is not yet made public.

The promoters of this movement hope to so adjust the different views presented that some equitable and harmonious plan can be devised under which all can unite for the good of the industry. The necessity for such combination is recognized by all, but there is a diversity of opinion as to the ways and means for bringing about the desired result. It is hoped that plans will be perfected within a few weeks.

Hon. Wellington Smith, of Lee, Mass., was a guest of the New England Paper Box Manufacturers' Association at its dinner last night, and favored those present with a talk on the making of paper. Mr. Smith told of the changed conditions of the industry, and the constant tendency to lower prices. He was sanguine enough, however, to say that prices now ruling were bottom figures on paper—a wish that was possibly father to the thought. This statement opens up the question, What are the ruling prices for paper? Take news; is there a settled market price on that line of paper? Have book papers any real standard price? Is the price of manillas any more defined? Dealers who buy the papers say "no." Did the paper manufacturer who unloaded twenty-four carloads of book paper onto a Boston paper dealer two weeks ago realize market prices? Well, hardly. Just to-day a city dealer reported a case which shows how demoralized the prices on paper are. He did not want the paper, and even declined to make an offer when pressed to do so, but at last the mill man said that he was determined to sell him one carload lot, and then he quoted a price which the paper dealer could not resist. Now, who is to blame for low prices? Is it possible that paper has no actual value? It would seem that the need of combination ought to be recognized in other lines of paper making besides news.

William T. Sibley, who represents Carter, Rice & Co. in the State of New York, is visiting his Boston home this week.

Adolph Salomon, of Train, Smith & Co.'s New York branch, is in town to-day.

Other representatives reported in town the past week were C. R. Milliken, of Portland, Me.; N. M. Jones, of Howland Falls, Me.; A. N. Burbank and J. W. Flint, of Bellows Falls, Vt.; E. S. Daniell, of Franklin, N. H.; Mr. Bartlett, of Nashua, N. H.; Wm. Foulds, of Manchester, Conn.; C. M. Robertson, of Mountville, Conn.; H. I. Wallace, of Fitchburg, Mass.; Charles S. Mayo, George W. Severane, of Lawrence, Mass.; Fred Temple, of Pepperell, Mass.; Geo. K. Baird and Oscar Dikeman, of Lee, Mass.; Hon. William Whiting, Mr. Cook and W. D. Judd, of Holyoke, Mass.; Mr. Williams, of Worcester, Mass.; Benj. M. Jackson, of Pawtucket, R. I.; Geo. C. Sherman, of Watertown, N. Y.; Mr. Mortimer and Mr. Noyes, of New York.

F. A. Smith, the John street paper dealer, returned from his Southern tour last week.

Charles A. Dean, of the Hollingsworth & Whitney Company, has finished his winter sojourn in Florida. He is reported to be in New York to-day and will be at his Federal street office before the week is out.

Charles D. Brown, William H. Claflin and James B. Forsyth are in New York this week. Wonder what the attraction is over in Gotham; base ball game or dog show?

Charles A. Brown, of C. D. Brown & Co., spent yesterday in Portland looking after the firm's entry of ground pulp at that port. Within the past two weeks five schooners with Nova Scotia pulp have arrived at Portland with pulp to C. D. Brown & Co. The pulp, some 600 tons, dry weight, has been distributed to mills direct from Portland.

Water is a little too plenty in many places this week owing to the thaws and heavy April rains.

The value of the exports of paper from Boston for the week ended April 5 was $4,713 and of books $1,807.

Concerning business itself there is not enough going on in this market to call for comment. Still, as a matter of record, the local paper business can be reported as being very quiet. DELESDERNIER.

Letters to a Paper Maker.

THE ENGINE ROLL AND BED-PLATE.

BY FERDINAND JAGENBERG.*

(Continued.)

3.

You ask: What is all this about the unit of superficial pressure? Is this figure of such importance to deserve making so many words about it?

Certainly it is. It is true that, viewed alone, it expresses little, and has told you little enough; but I assure you that in comparing the units of pressure of rolls and bed-plates of different dimensions and weights this figure may become extremely useful and capable of conveying a positive idea of the crushing power of an engine in operation.

Have the kindness to inspect the formula a little more closely, and then ask yourself what it means. You will find in the first place that the effect of the roll and bed-plate depends directly on the diameter and weight of the roll; secondly, that it is inversely proportioned to the number, length and thickness of the knives of the roll and bed-plate.

Your sound sense will tell you this after a little reflection. Such a formula, however, has the advantage of presenting a clearer and more distinct understanding to the mind; it symbolizes the laws which underlie the action of the engine. In short, I shall explain to you the significance of the unit of superficial pressure and its formula by means of a few examples, which I think will have more effect on you than a long string of philosophy.

Let the roll and bed-plate which I described in my last letter serve as Example No 1, and I begin here with

Example No. 2.

This shall be only slightly different from No. 1. Let us suppose the same kind of a roll, but substitute a bed-plate with eighteen knives of 0.3 centimetres thickness each. The two will then work with a different pressure. What will this pressure be? Let us consult our formula:

$$W = \frac{G\ U}{L\ Sr\ Sg},$$

or substituting figures,

$$W = \frac{1170 \times 298.45}{80 \times 48 \times 3.9} = 23.3 \text{ kilograms}$$

per 1 square centimetre.

With your ready comprehension you will not require the formula at all for this calculation. The unit of pressure simply increases in the same proportion as the aggregate thickness of the bed knives decreases, as compared with Example No. 1:

$$W = 10.05 \times \frac{9}{3.9} = 23.3$$

which proves the correctness of the calculation at once.

I call your attention to the fact that by this change in the bed-plate the effect of the crushing process has been more than doubled, and it may consequently be inferred that the result or work done by the roll and bed-plate in the latter case will be greatly different from that effected in the first. Pulp produced under a normal pressure of 23.3 must necessarily make paper of different qualities from pulp produced under a pressure of 10.05 kilograms. It must also be noted that, while the crushing action has gained in intensity, the number of cuts has been reduced, namely by $(18-13) \times 60 = 300$ cuts in one single revolution of the roll.

Example No. 3.

You would probably like to know of how many knives the bed-plate used for Example No. 2 should be composed in order to restore the pressure of 10.05 kilograms per square centimetre. Nothing is easier than that; we do not even require the formula to ascertain this. The total working surface of the 0.3 centimetre bed-knives would have to equal that of the bed-knives in Example No. 1, viz., 9 centimetres. Divide these 9 centimetres by 0.3, and we obtain 30 knives. I have no objection to your proving the correctness of this calculation by using the formula. Notwithstanding this apparent equality, a bed-plate of 30 such knives—let it and the roll used in illustrating the preceding examples serve for Example No: 3—would not be equivalent to the bed-plate of Example No. 1. Although the crushing process would be exactly the same and give the same results, the number of cuts would increase by $(30-18) \times 60 = 720$ cuts during one single revolution of the roll. Attention, therefore!

Example No. 4.

For certain reasons of my own, and which are of no importance to you, I desire that the bed-plate shall be composed of only fifteen knives of 0.4 cms. thickness each; but at the same time I desire the unit of pressure to remain the same as in Example No. 1, namely 10.05 kilograms per square centimetre. What would you do in that case? You will admit that there is no other way than either to alter our old roll or to substitute a new one. Before deciding the matter definitely we shall consider it thoroughly and in all of its bearings. Let us first of all ascertain the relation of the new bed-plate to the old: $(15 \times 0.4) : (18 \times 0.5) = 6 : 9 = 2 : 3$. The new bed-plate is therefore two-thirds smaller. Our formula says that, other conditions remaining the same, the alteration of the roll may be effected in the following ways:

1. By reducing its weight one-third, thus $\frac{2}{3} \times 1170 = 780$ kilograms.

2. By reducing its diameter one-third, thus $\frac{2}{3} \times 95 = 63.333$ centimetres.

3. By increasing its length one-half; this would be really impracticable, because the length of the roll must correspond to the length of the bed-plate, and the engine tub moreover does not permit any such extension of the roll.

4. By increasing the sum total of the knife surfaces one-half, thus $\frac{1}{2} \times 48 = 72$ centimetres, and we would be at liberty to choose:

180	knives,	4	millimetres	thick each
144	"	5	"	" "
120	"	6	"	" "
103	"	7	"	" "
90	"	8	"	" "
80	"	9	"	" "
72	"	10	"	" "
65	"	11	"	" "
60	"	12	"	" "

and so forth.

What would you do? You are free to select one of three ways, and the last mentioned of these can, moreover, be adapted to many different cases. While I leave the selection to your own good judgment, which will readily discern the proper course, I shall state the three cases in a manner easy to be surveyed:

	Weight.	Diameter.	Total of Knife Surfaces.
1st roll....	780 kilogs.	95 cms.	48 cms.
2d roll.....	1170 "	63 "	48 "
3d roll.....	1170 "	95 "	72 "

Example No. 5.

Let us suppose that our old roll No. 1 is worn out, and that it becomes necessary to substitute a new one. Beating under a unit of pressure of 10.05 kilograms had proved just the proper thing for the kind of stock we were using, and the quality of the paper to be made, and we therefore desire to maintain it. However, it is desired to improve the draft of the engine, that is, the circulation of the pulp in the engine tub, by increasing the diameter of the new roll 10 centimeters. The number and thickness of the knives on the roll remain as before. After finishing the new roll it is found, however, that its weight exceeds that of the old roll by 300 kilograms, owing, probably, to its increased diameter. The roll is put in, nevertheless; but we find to our dismay that the paper made with it lacks its former strength and fine rattle. The engine furnishes more pulp, it is true, but the paper is inferior.

I imagine that I can see you smile while you are reading these lines; for you know that such altered conditions—first, the larger diameter of the roll, and second, its increased weight—must increase the unit of pressure and affect the beating process correspondingly. By how much? Let us see our formula and find out:

$$W = \frac{1450 \times 315.73}{80 \times 48 \times 9} = 12.7$$

(I have made allowance in calculating the weight of the new roll for its increased buoyancy.)

What is to be done? The roll is there and of course we do not wish to throw away such an expensive piece of machinery. We might lighten the roll; but the existing mechanical appliances for this purpose, the lighters, are too unreliable. Stop! We have the bed-plate; something may be done with that. The sum total of the surfaces of the bed-knives can be easily increased, and the unit of pressure be thus decreased. We may add a few knives, but in that case too many cuts result, and this does not suit our purpose, for we desire to continue working under the same conditions as before as regards number of cuts and crushing power. Nothing remains but to exchange the bed-knives for others which are proportionately thicker. The total knife surface of the bed-plate must be increased as much as the former unit of superficial pressure is smaller than the present; thus

$$\frac{12.7}{10.05} \times 9 = 11.3 \text{ centimetres.}$$

The total thickness of the 18 knives would therefore be 11.3 centimetres, or 0.63 centimetre for each knife.

This reminds me that I have read the following passage in the new edition of "Hofmann's Treatise on Paper Making," page 91.

"It has been proved that the great strength of some celebrated papers was entirely due to the light weight of the rolls, for after changing engines the manufacturers were unable to furnish the same good quality of paper, although the same raw materials were used and the same treatment was applied. The weight of the rolls had evidently not been sufficiently considered, and they were made too heavy. The beating process was carried on as before, but required much less time; the fibre was shorter, the stuff became less smeary and the paper lost the strength for which it was noted."

It is hardly necessary, after what has been said regarding the roll and bed-plate No. 5, to point out what the paper manufacturers who sustained losses through heavy rolls could have done to correct the action of the new apparatus and to obtain the same good results with the new rolls as with the old. The unit of superficial pressure had evidently become too large, owing to the increased weight of the roll. The manufacturer had it in his power to reduce the pressure by the means first explained. You may raise the objection that the frictional resistance increases with the surface of contact of the roll, and that this may cause a greater consumption of power by the engine. Of course it does! Would not otherwise the capacity of the engine have increased correspondingly? Be this as it may, I hope to have an opportunity before we end this discussion to disclose to you another remedy, which will meet your approval.

For the present I only wish to call your attention to a matter which seems to me of too much importance to let it pass unnoticed.

I refer to the so-called sharpening of the roll and bed-knives. You told me once in your gruff way while visiting your mill, if I remember correctly, that you must consider any paper maker who sharpens the knives of his engines devoid of the first knowledge of the business. You know that my views on matters in general are not as severe as yours, and also in this point I do not go so far in my condemnation as you. I am of the opinion that these manufacturers merely take a false view of the matter; they believe that by sharpening the knives they increase the cutting power of the roll and bed-plate. In a certain sense they really do this; not, however, in that which they have in view, but, if I may thus express myself, in a secondary sense. The edges of the knives do not become sharper than they were before, and therefore do not cut any better as such; but the unit of superficial pressure is increased in an extraordinary degree, and it must be admitted that, in consequence, the effect of the cutting process is also intensified.

For the present, however, we shall pay no attention to the cutting process, but ascertain what effect the sharpening of the knives has on the superficial pressure.

Example No. 6.

Let us take our old roll and bed-plate No. 1, and grind the knives of the roll down from 8 mms. in thickness to 4 mms., and those of the bed-plate from 5 mms. to 2 mms. Suppose that by sharpening the knives the weight of the roll is decreased 25 kilograms, and our formula will show us the following result:

$$W = \frac{1145 \times 298.45}{80 \times 24 \times 3.6} = 49.3 \text{ kilograms.}$$

Does it surprise you to see to what proportions the pressure has increased?

There may be cases where the nature of the raw materials or the desired qualities of the paper which is to be produced demand such great pressure, and perhaps even more. We have nothing to say against that; but we are old paper makers and have ourselves worked at times with sharpened knives. What have you then observed? That the knives of the roll, as well as those of the bed plate, wear down, in time. Of course; but that is also the case with knives which do not taper toward the edge. It must, therefore, be observed with regard to the flat pointed knives, as contrasted with flat blunt knives, that with each progressive degree of wear the working edges of the former become broader. The knives of the roll wear off slower than those of the bed plate, because there are more of them, and they are usually made of harder material, or at least should be. The amount of wear also varies in different mills. Manufacturers of wrapping paper require three or four times as many knives as the manufacturers of letter paper. Bones, pieces of iron, buttons, sand, buckles, coins, gravel, and heaven knows what other matters, wear the knives out in a very short time. I can see this best of all by the number of knives which I furnish to the different paper mills; but I would be unable to give accurate figures regarding the wear. This, however, is of no importance in propounding my ideas, and you will understand me, no matter what figures I may use for my explanation.

Let us look at our roll and bed-plate No. 6 after two months' work. The knives of the roll are worn down so much that their edges measure 5 mms. in width, and those of the bed-knives are now 3½ mms. wide. The bed-plate has become lower, and the roll is of smaller diameter than before. The fact that the bed-plate has become lower is of no importance to our case, but the reduction in the diameter of the roll is of some consequence. It amounts to 8 mms. We can now apply these figures to our formula and ascertain how many kilograms the unit of pressure has been reduced during the two months. W = ——. Hold on! The weight of the roll has also been reduced, and these 5 kilograms must be deducted. Thus:

$$W = \frac{1140 \times 295.54}{80 \times 30 \times 5.3} = 22.3 \text{ kilograms.}$$

During two months or sixty working days the effect of the crushing process with this roll and bed-plate with sharpened knives has been reduced from a unit of pressure of 49.3 kilograms to one of 22.3 kilograms. Let us suppose that the wear has been uniformly progressive during the whole sixty days, and we find that the average difference in pressure from one day to another is 27-60 or about 0.45 kilograms. The wear has not, however, been as uniform as I supposed, but was greater in the beginning than toward the end of the two months. The difference in the unit of pressure must in the beginning also have been greater and toward the end smaller than the figure above given, but the latter expresses the correct average.

(To be continued.)

*Translated for THE PAPER TRADE JOURNAL by special arrangement with the author.

The British Export Trade.

The statistics of the British Board of Trade, showing the English imports and exports during February, are to hand. Speaking of the exports of cotton piece goods to this country, the *London Economist*, March 9, said:

"We sent nearly double the quantity to the United States, our shipments for the month being 8,351,700 yards, against 4,406,500 yards in February, 1894."

During the first two months of this year England has shipped to this country 17,815,100 yards of piece goods, as against 11,104,000 yards shipped during January and February, 1894. In woolen and worsted goods the value of woolen fabrics sent to the United States this year is three times and of worsted manufactures more than four times that of 1894, while, if quantities are compared, the increase in each case amounts to quite 400 per cent.

During the two months of this year England shipped us 1,925,400 yards of woolen tissues, as against 430,200 yards in 1894. She also shipped us 12,506,500 yards of worsted tissues, as against 2,235,700 yards in January and February, 1894.

Of hardware and cutlery her February exports amounted to $80,000, and for the two months, January and February, $165,000, as against exports of $110,000 in the corresponding months a year ago.

In the tin plate trade the shipments for February were 23,201 tons—an increase of almost 10,000 tons over the shipments in February, 1894. For the two months the shipments were 41,827 tons, as against 31,709 tons a year ago, the increase over this year being, in round numbers, $500,000. Of raw wool this country has taken nearly $2,500,000 worth in two months, as against $380,000 worth in the same period of 1894.

The exports of English carpets to the United States were 142,900 square yards for the two months this year, as against 59,200 square yards in January and February, 1894. We also note English exports to the United States of 3,410 tons of railroad iron, where none was shipped a year ago; also 2,215 tons of unwrought steel, as against 1,759 tons last year.

Textile machinery worth $400,000 has been sent us this year, as against shipments worth $220,000 a year ago; empty bags and sacks to the number of 34,800 dozen this year, as against 9,995 dozen a year ago. The earthenware, chinaware and porcelain shipped this year were valued at $630,000 for the two months, as against shipments worth $350,000 in 1894.

The faces of pulleys should be about 25 per cent. wider than their belts.

New Inventions—LXXIV.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Geo. Damon Rice.

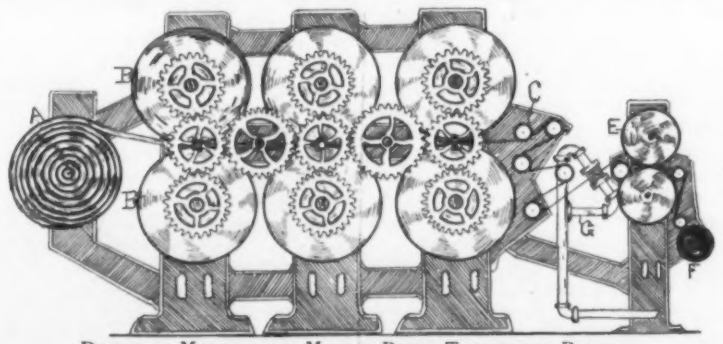
The manufacture of typewriter ribbons is an industry which has developed into large proportions during the past five years. The almost universal adoption of writing machines in business houses, offices, banks, schools, newspaper offices and the home has not only given employment to the forty or more different styles of machines now on the market, but has created a demand for supplies, such as ribbons, &c.

A typewriter representative informed the writer that nearly half a million machines are in constant use in America. A typewriter ribbon does not last very long, so that it can be seen that the ribbon industry of itself is notable. Since the beginning a main element in ribbon making has been related to the preservation of the coloring matter; that is, of the thirty odd patents recorded on special machine ribbons the chief aim of the inventor has been to prevent evaporation of the inking material from exposed ribbons. So long as the ribbons are preserved in metallic lined boxes in the shape in which they are sent to the market no evaporation takes place; but when in use parts of the ribbon are necessarily exposed to the action of the air and the ink drys out before the ribbon becomes useless in other respects.

Reference to directories of large commercial centres shows that there are some twenty-five typewriting ribbon manufacturers in the Eastern States, all of them making the ribbon from practically the same sort of fibrous substance; yet, according to information from other sources, each maker controls a secret process of his own in the matter of the ink and its application. Some of these concerns employ expert chemists, who experiment continually with a view of improving the ribbons, for this country is supplying foreign houses now, and the concern which turns out the best all-around ribbon secures large business. So well have these chemists and the inventors done their work that, from a business standpoint, the typewriter ribbon of to-day is well nigh as perfect as a machine operator could wish; and as long as no better can be procured no change will be made.

There are indications that the neatly made, selvaged edged ribbon woven from silk or other fine textile fibre will be supplanted to some extent by a new sort of paper pulp ribbon, which absorbs ink in such a manner, and has such an affinity for it, that evaporation does not occur, as in the case of the other kind. In the case of the ordinary ribbon the inky ingredients are applied externally, and the fibres of the threads are only coated; hence drying occurs. In the pulp ribbons the ink and the pulp are one, a condition effected by a special combination. Hence evaporation is retarded. None of the new ribbons are yet on the market; but samples have been made and tested, and have passed inspection.

The ribbons are not woven from yarns made from paper pulp, as one might suppose. Pulp procured from well agitated rag stock, in which are introduced litharge, tallow, a solvent obtained from waste silk, and two or three other ingredients of a secret nature, is prepared in the pulp mill in about the ordinary way, except that special pains are taken, as the work is rather more delicate than in making regular stock. The compound secured from the waste silk forms an important element in the pulp mixture, as it imparts softness, elasticity and flexibility, when introduced in combination with the other substances. It is during that last stage, when the mixture is in a big tank, that the inking parts are put in. If black ribbons are wanted, black ink is used; if red, a red colorant is employed, and so on. Thus the stock for ribbon and the inking material are made one by thorough mixing. The character of the compounds introduced at this juncture for the purpose of aiding in preventing evaporation is not given; but they are akin to the substances used to prevent printers' rollers from drying. The pulp is next run off into sheets 1 inch thick; it is then pressed between rollers to the thickness of regular ribbon, after which it is cut to the right widths, rolled up and sold.



Design of Machine for Making Paper Typewriter Ribbons.

Thus far the work on the ribbons has been done mostly by hand. A diagram of an elaborate machine, copied from the original plans now in the hands of the machinists, is shown, and in it A represents the roll of pulp, which is about a yard wide and over an inch thick. The cylinders B, B are turned by the gearing as indicated, and the pulp goes between these, each successive cylinder pressing the stock thinner, so that when it gets to the dry pipes C the sheet is of the thickness of a regular ribbon. A softening and preserving liquid is applied by the brushes at the end of the supply pipe G, then the sheet passes to the final drying and pressing rolls, E, whence it rolls up at F. Then comes slicing of the sheet into widths for use on the writing machines, and the work is done.

The cost of a commercial article is the main thing nowadays. Regular typewriter ribbons cost $1. "Cut rate" dealers sometimes charge only 75 cents. So rapidly can the proposed pulp ribbons be manufactured, and so much cheaper is the material used, aside from the inks, that it is claimed that the latter kind will sell for about 40 per cent. less. Good ribbons, or the kind in regular use, will not dry out for about two years with ordinary use, but will do so sooner if operated as steadily as is required in some business houses. Surroundings, such as dry air, heated apartments, &c., alter the length of the life of a ribbon. Calculating on the basis of tests made with the paper pulp ribbons, the life of these will be considerably longer than two years, as the evaporating feature is almost entirely overcome.

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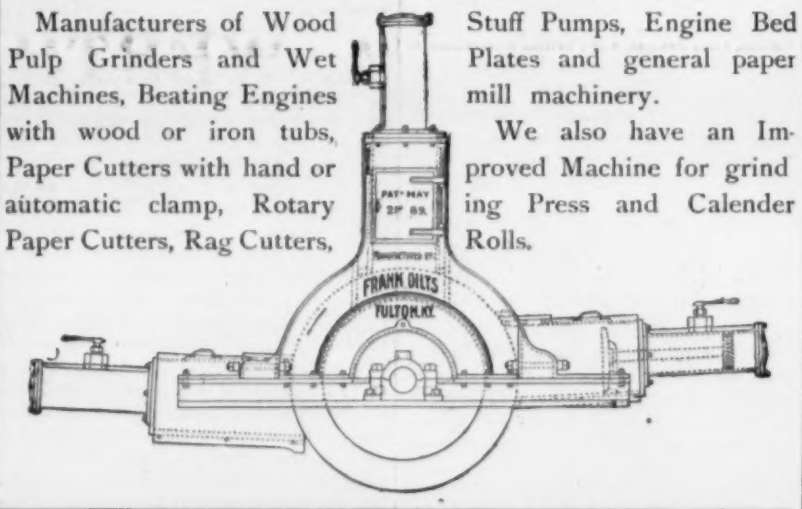

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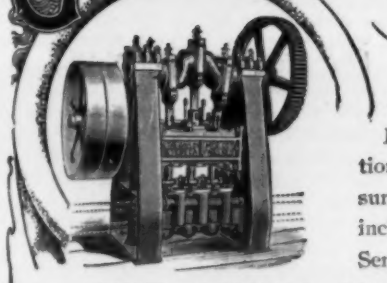

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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED APRIL 5, 1895.

An. Colors..	747	$47,234	Paper.....	700	$32,489
Alum.....	—	—	Steel Pens..	3	1,827
Alum's Cake	—	—	Stationery.	15	1,180
Bl. Powders	311	5,265	SlatePencils	120	828
Soda Ash...	7,903	18,556	Clay.....	—	8,084
Soda, Caus.	1,000	10,004	J'te B'ts, &c	9,252	22,048
Soda, Sal....	280	608	P.Hangings	56	2,757
Soda, Hypo.	—	—	Pap'r Stock	2,293	97,281
Ultramarine	11	368	TerraAlba.	—	—
Books.....	317	29,500	Waste.....	35	4,676
Newspapers	178	5,976	Wood Pulp	—	—
Engravings.	100	9,152			
Ink.....	22	431			
Lead Pencils	15	433	Totals...	24,058	228,696

Imports General Merchandise for the week ended April 5, 1895..... $7,022,111

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO APRIL 10, 1895.

Whence Imported.	*Rags.*	*Old Paper.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Antwerp.....	1,607	5	686	....	4,364
Bordeaux.....	181	....	....	....	370
Bremen.....	821	469	....	....	2,321
Bristol.....	....	...	....	....	1,306
Buenos Ayres.	520	....	....	....	....
Cen. America.	180	....	....	....	....
Christiania....	....	....	85	....	....
Copenhagen..	...	....	105	....	1,042
Dundee.....	....	....	....	....	474
Fiume.....	....	....	20	....	....
Genoa.....	590	....	....	....	1,719
Ghent.....	90	40	....	....	395
Glasgow.....	123	....	....	....	....
Hamburg.....	4,188	174	722	....	380
Havre.....	....	....	....	....	303
Hiogo.....	6,544	....	....	....	....
Hull.....	1,646	....	1,289	....	2,092
Kobe.....	8,079	....	....	....	....
Leghorn.....	808	....	....	....	185
Liverpool.....	462	147	....	....	2,847
London.....	1,644	705	....	....	1,648
Marseilles....	155	....	30	....	715
Newcastle....	....	154	....	....	2,167
Rotterdam....	1,458	....	446	....	185
Stettin.....	401	....	....	....	486
Trieste.....	123	....	45	....	....

NEW YORK IMPORTS.

FROM APRIL 3 TO APRIL 10, 1895.

Paper Stock.

S. Rawitzer, Stockholm City, Antwerp, 54 bs. rags.

Jessup & Moore Paper Company, by same, 120 bs. rags.

R. H. Overton & Son, by same, 120 bs. rags, 85 bs. bagging.

Castle & Gottheil, by same, 87 bs. rags and flax waste.

R. Helwig, by same, 60 tons chemical fibre.

James Pirnie, Waesland, Antwerp, 462 bs. bagging.

Castle & Gottheil, by same, 25 bs. rags.

Train, Smith & Co., Marengo, Antwerp, 244 bs. rags.

James Pirnie, by same, 185 bs. bagging.

Lewy Brothers, by same, 71 bs. rags.

Castle & Gottheil, by same, 17 bs. rags.

Horace Dutton & Co., by same, 184 bs. manillas.

S. Goldman, by same, 3 tons chemical fibre.

F. Salomon & Co., Anna, Bremen, 694 bs. bagging.

Perkins, Goodwin & Co., by same, 163 bs. rags.

Train, Smith & Co., Massasoit, Bristol, 106 bs. manillas.

Burgass & Co., Jersey City, Bristol, 35 bs. manillas.

J. W. Mason & Co., Hekla, Copenhagen, 178 bs. manillas.

F. Salomon & Co., by same, 200 bs. bagging.

Train, Smith & Co., Principia, Dundee, 153 bs. manillas.

F. Salomon & Co., Scandia, Hamburg, 127 bs. rags.

Lewy Brothers, by same, 100 bs. rags.

F. Bertuch & Co., Galileo, Hull, 44 tons chemical fibre.

E. Hatton & Co., by same, 22 tons chemical fibre.

Darmstadt & Scott, by same, 9 bs. rags.

F. P. Rose, by same, 43 bs. rags.

Atterbury Brothers, by same, 92 bs. rags.

Castle & Gottheil, by same, 92 bs. rags.

John H. Lyon & Co., by same, 14 bs. rags.

Train, Smith & Co., Nomadic, Liverpool, 252 bs. manillas.

James Pirnie, by same, 363 bs. bagging.

G. Stratford, Mobile, London, 396 bs. manillas.

Castle & Gottheil, Massachusetts, London, 77 bs. flax waste.

J. Soames, Europe, London, 62 bs. rags.

James Pirnie, August, Marseilles, 471 bs. bagging.

Train, Smith & Co., by same, 66 bs. rags.

George Ropes, by same, 89 bs. rags, 17 bs. manillas.

Jessup & Moore Paper Company, by same, 200 bs. manillas.

J. Libmann & Co., by same, 27 bs. manillas.

Castle & Gottheil, Taormina, Hamburg, 27 bs. rags.

Paper.

L. De Jonge & Co., Mobile, London, 2 cs.

W. Wicke & Co., Havel, Bremen, 3 cs.

American News Company, Teutonic, Liverpool, 21 cs.

Kupfer Brothers, by same, 10 cs.

Kupfer Brothers, Obdam, Rotterdam, 12 cs.

Henry Lips, by same, 1 cs.

G. Gennert, Nomadic, Liverpool, 13 cs.

American Trading Company, Lillian L. Robbins, Hong Kong, 15 cs.

G. W. Sheldon & Co., Massasoit, Bristol, 36 cs.

R. F. Downing & Co., Stockholm City, Antwerp, 49 cs.

Keuffel & Esser, Waesland, Antwerp, 1 cs.

Kupfer Brothers, by same, 10 cs.

L. DeJonge & Co., by same, 27 cs.

L. C. Wagner, by same, 4 cs.

E. G. Soltmann, by same, 3 cs.

C. S. Abbott, by same, 23 cs.

C. D. Stone, Marengo, Antwerp, 69 cs.

O. G. Hempstead & Co., by same, 7 cs.

J. & H. Berge, Wittekind, Bremen, 4 cs.

Dennison Manufacturing Company, Umbria, Liverpool, 82 cs.

E. Kimpton, by same, 2 cs.

Favor, Ruhl & Co., by same, 5 cs.

American Trading Company, La Normandie, Havre, 36 cs.

J. C. Drucklieb & Co., by same, 5 cs.

E. Fougera & Co., by same, 62 cs.

G. W. Sheldon & Co., by same, 3 cs.

F. W. Devoe & Co., by same, 5 cs.

Neuss, Hesslein & Co., Spaarndam, Rotterdam, 26 cs.

Mullens & Kropff, by same, 2 cs.

E. & H. T. Anthony & Co., by same, 3 cs.

E. Majert, by same, 54 cs. hangings.

Henry Lips, Scandia, Hamburg, 51 cs.

BOSTON IMPORTS.

FROM APRIL 4 TO APRIL 10, 1895, INCLUSIVE.

Paper, &c.

W. N. Proctor, California, Hamburg, 1 cs. albums.

A. P. Schmidt, by same, 4 cs. printed music.

Stone & Downer, Ottoman, Liverpool, 10 cs. paper.

Dennison Manufacturing Company, by same, 8 bs. tissue paper.

Paper Stock.

Train, Smith & Co., Brazilian, Glasgow, 63 bs. rags, 94 bs. waste paper.

Horace Dutton & Co., by same, 135 bs. waste paper.

L. Salomon & Co., Californian, Hamburg, 109 bs. rags.

C. A. Cheney, Ottoman, Liverpool, 33 bs. manillas.

R. H. Overton & Son, by same, 113 bs. manillas.

Horace Dutton & Co., by same, 122 coils manillas.

Hollingsworth & Whitney Company, Columbian, Liverpool, 91 bs. manillas.

Sizing.

C. A. Cheney, Columbian, Liverpool, 105 bags.

C. A. Cheney, Ottoman, Liverpool, 171 bags.

Bleaching Powder.

J. L. & D. S. Riker, Ottoman, Liverpool, 204 cks.

Fuerst Brothers, Columbian, Liverpool, 37 cks.

Bowman, Thompson & Co., by same, 74 cks.

Caustic Soda.

J. L. & D. S. Riker, Ottoman, Liverpool, 50 drums.

Edward Hill's Son & Co., Columbian, Liverpool, 200 drums.

Soda Ash.

Warren & Co., Ottoman, Liverpool, 34 cks. and 200 bags.

A. Klipstein & Co., by same, 21 cks. and 100 bags.

Churchman & Co., by same, 20 cks.

Soda Crystals.

Warren & Co., Ottoman, Liverpool, 140 bbls.

Crude Sulphur.

Linder & Meyer, Columbian, Liverpool, 1,900 bags.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED APRIL 6, 1895.

Paper Stock.

Heidelback, Ickelheimer & Co., Carthagenian, Glasgow, 25 bs. rags.

Soda Ash.

Order, Carthagenian, Glasgow, 21 cks.

Caustic Soda.

E. Hill's Son & Co., Carthagenian, Glasgow, 200 drums.

James Lee & Co., by same, 75 drums.

Bleaching Powder.

J. L. & D. S. Riker, Carthagenian, Glasgow, 25 bbls. and 130 tcs.

Order, by same, 255 cks.

China Clay.

Order, Carthagenian, Glasgow, 277 cks.

Crude Sulphur.

Order, Kensington, Liverpool, 801 bags.

EXPORTS of Paper, &c., from New York for the Week Ended April 9, 1895.

BOOKS, to Antwerp, 3 cs.; Brazil, 1 cs.; British Guiana, 1 cs.; Bremen, 6 cs.; British Australasia, 25 cs.; British West Indies, 24 cs.; Cuba, 1 cs.; Chili, 4 cs.; Dutch West Indies, 2 cs.; Glasgow, 1 cs.; Hamburg, 6 cs.; Havre, 4 cs.; London, 8 cs.; Leipsic, 4 cs.; Liverpool, 113 cs.; Mexico, 1 cs.; New Zealand, 1 pkg.; Rotterdam, 1 cs.; Colombia, 2 cs.

PAPER, to Bolton, 11 cs.; Brazil, 26 pkgs.; British Australasia, 486 pkgs.; Barcelona, 1 cs.; British West Indies, 446 bbls.; Cuba, 211 pkgs.; Chili, 553 cs.; Copenhagen, 1 cs.; Canada, 5 cs.; Ecuador, 16 cs.; Dutch West Indies, 13 pkgs.; Hayti, 3 cs.; Hamburg, 15 cs.; London, 106 cs.; Liverpool, 30 cs.; Mexico, 93 pkgs.; New Brunswick, 450 pkgs.; New Zealand, 514 pkgs.; Porto Rico, 347 bdls.; San Domingo, 17 pkgs.; Colombia, 3 pkgs.; Venezuela, 15 pkgs.

STATIONERY, to Brazil, 5 cs.; British Australasia, 15 cs.; Cuba, 8 pkgs.; British West Indies, 21 cs.; Chili, 1 cs.; London, 75 cs.; Copenhagen, 8 cs.; Constantinople, 25 cs.; Porto Rico, 8 cs.; Central America, 5 pkgs.; Dutch West Indies, 3 cs.; Gibraltar, 1 cs.; Liverpool, 4 cs.; Mexico, 20 cs.; New Brunswick, 3 cs.; Peru, 4 pkgs.; Stockholm, 4 cs.; Venezuela, 9 cs.

SANDPAPER, to Antwerp, 7 pkgs.; Brazil, 3 cs.; Bolivia, 10 pkgs.; Cuba, 10 pkgs.; British Australasia, 1 cs.; British West Indies, 7 pkgs.; Chili, 30 bs.; Copenhagen, 25 bdls.; Havre 16 bs.; Hamburg, 3 bdls.; Intra, 4 bdls.; London, 39 bdls.; New Zealand, 3 cs.; Rotterdam, 50 pkgs.; Venezuela, 6 bdls.

TWINE, bales, to Brazil, 2; British West Indies, 9; Chili, 3; Hayti, 2; Hamburg, 65; Venezuela, 22.

WALL PAPER, cases, to Chili, 4.

TAGS, cases, to New Zealand, 4.

LABELS, packages, to Cuba, 1.

AGGREGATES AND VALUES.

Paper, reams.....	....	....
Paper, pkgs.....	1,495	$13,890
Paper, cases.....	230	4,143
Books, cases.....	229	10,989
Stationery, cases.....	215	12,695
Rosin, bbls.....	1,826	5,147
Totals.....	4,017	$46,864

Exports General Merchandise for the week ended April 9, 1895..... $7,532,345

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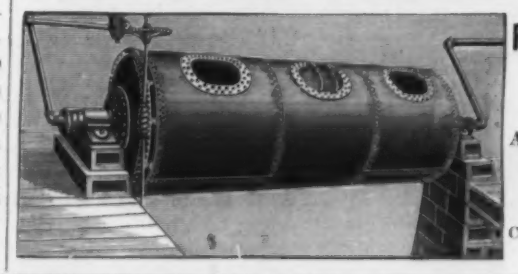
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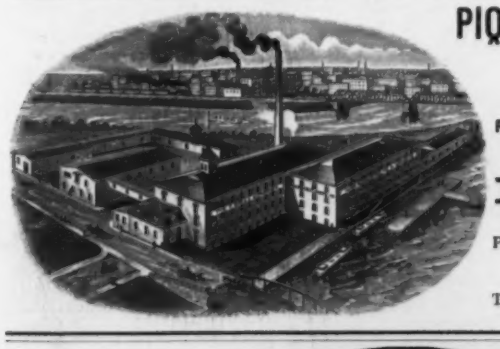
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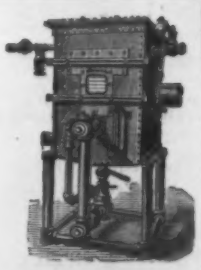
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NEW YORK: SATURDAY, APRIL 13, 1895.

THE *Manufacturers' Record* has been seeking the opinion of well-known business and financial men on the commercial outlook, and prints letters from a number in the East and South from which the utmost encourgement can be gathered. All unite in saying that they believe that henceforward there is likely to be a general and permanent revival of trade, and that no backsets are probable. Railroad traffic is increasing, the confidence of investors is growing, as shown by the withdrawals of bank deposits, there is a decided increase in the demand for iron and steel products, and in other lines of trade there is a decided "looking up." There was, also, during the month of March a very close correspondence between the receipts and expenditures of the Government, and although that wholesome and encouraging feature of national financial affairs is not likely to be maintained during the remainder of the fiscal year, owing to the extraordinary charges against the Treasury which must be met, yet it indicates a slow reaction toward normal conditions which may be properly interpreted as hopeful.

IN the series of letters mentioned above we note one from Abram S. Hewitt, in which he says: "My impression is that we have seen the worst of the business depression, but that there cannot be any such revival as we desire to see until the currency of the country is placed upon a stable foundation. The silver mirage must be extinguished from the public mind before capital, either foreign or domestic, will be available to any great degree for new enterprises; and it is upon them that we must depend for any decided developments of the resources of the country, which are as abundant as ever, and can be made a source of great prosperity whenever our people shall have learned by bitter experience the excellent lesson that the standard of value must be rigidly kept upon the basis of gold." In another communication from John H. Inman, of this city, we find the following: "I believe the steadily increasing production of gold throughout the world will give a plentiful supply to go around. So far as the proposed International Monetary Conference is concerned, it will not lead to anything, as England will not become a party to it. I think the action of the German Reichstag is purely a bluff made to appease the growing populist feeling in that empire. The silver and the currency questions want to be let alone, but the national bank act needs some amendment." With all due respect for the currency opinions of both gentlemen, we venture the assertion that the prospect for international bimetallism is not altogether gloomy. With by far the larger proportion of the people of the earth doing business on a silver basis, it seems much more feasible, and more righteous as well, to institute an international double standard to which they can agree, than to force them to the acceptance of a single standard about which they know nothing. It is to be borne in mind also that the markets for which the manufacturing countries of the world are now contending are those belonging to silver using people, and the nation which admits their needs and conforms to their conditions will get the benefit of their trade. The conditions of exchange have altered and will continue to alter. There is no longer one dominant power in this regard, and no clinging to prestige or standing upon dignity will hold the ground.

ENGLISH contemporaries are discussing the feasibility of a London Exchange for the paper trade of Great Britain, which, they say, "has no central commercial organization such as is enjoyed by other industries." It would seem that such an institution properly organized and working disinterestedly on a basis of national good could be made a strong lever for bringing the British paper manufacturer out of the ruts of dull business, of which he has so long been complaining. There are many things for which, in a country of limited area like Great Britain, an exchange would be a most serviceable instrument, one of which would be the bringing about of a solidarity of interests which would in time secure a more healthy and stable condition in the trade, minimize destructive competition, sustain prices at profitable figures and do other things of benefit alike to individuals and the general well-being of the industry. "One of the advantages," says an exchange, "which is likely to accrue from the establishment of a paper exchange is this: That the holder of paper stocks, under stress of financial depression, would not be reduced to the necessity of disposing of them at a sacrifice, but could obtain advances upon their security which would tide him over the strain. Every forced realization of the kind weakens the market price; and, be it noted, it is not always the consumer that gets the benefit of low prices, but the speculator in such stocks." Certainly an exchange with power to make advances on property of this kind could most effectively stand between the manufacturer and any element likely to disturb and lower prices, and at the same time avert troubles arising from a temporary stress of circumstances which, in the present close relations of industry and trade, are often the initial movement in far reaching commercial disturbances. We could wish for nothing better for the paper trade of the United States than a properly and solidly organized system of exchanges, with powers similar to those suggested above, and it may come in time. In a matter of this kind, however, Great Britain has the advantage of a single commercial centre which controls and fixes prices and acts as a sort of clearing house for the whole kingdom, while here there are many such centres, all important to the sections in which they are located, and all, to a certain extent, controlling the prices of commodities in contributive areas of country. It is a matter which deserves thoughtful consideration, however, and we commend it to the paper makers themselves for discussion.

Watermarks.

BY DANDY.

Genius, that Power which dazzles mortal eyes,
Is oft but Perseverance in disguise.
Continuous effort, of itself, implies
In spite of countless falls the power to rise.
'Twixt Failure and Success the point's so fine
Men sometimes know not when they touch the line.
Just when the pearl was waiting one more plunge,
How many a struggler has thrown up the sponge!
As the tide goes clear out, it comes clear in;
In business 'tis at turns the wisest win.
And oh! how true, when shades of doubt dismay,
"'Tis often darkest just before the day."
A little more persistence, courage, vim!
Success will dawn o'er Failure's cloudy rim.
Then take this honey for the bitterest cup:
"There is no failure, save in giving up.
No real fall as long as one still tries,
For seeming setbacks make the strong man wise.
There's no defeat, in truth, save from within;
Unless you're beaten there, you're bound to win."
—HENRY AUSTIN.

There is no telling what trouble a fellow may get into when his wife goes away and leaves him alone, and a paper manufacturer who lives in the City of Churches can back up this statement. His better-half has been in the South, and during her absence there has been a gastronomic discovery in the kitchen department of the household. It seems that the p. m. was ordered by his doctor to get a bottle of sherry and put in it 60 grains of quinine. He followed instructions literally, except that as the sherry bottle was small in the neck he emptied the entire mixture into a port wine bottle owned by his absent spouse.

It appears that the daughter of the household, on whom the responsibilities of housekeeping were thrust, expected visitors to dinner the next evening, and she made an ample supply of cake, which at the appointed time was served, much to the delight of all. Later in the evening, before retiring, the p. m. went for his sherry and quinine. He found it not, and when he asked his daughter about it and indicated that it ought to be in her mother's port wine bottle, the daughter, who up to this time knew nothing about the quinine, said:

"Why, papa, I used it in the cake!"

Quinine cake evidently was good, for none of those who ate it noticed that it was loaded to kill malaria.

The p. m. says: "Well, I didn't mind the quinine so much, but, great Cæsar! think of my good sherry going that way."

Some gunny bagging which was "soaked" with a couple of New York banks many, many moons ago was this week disposed of, and everybody is much pleased thereat. I say everybody, but perhaps I ought to except the banks, which, I understand, made a loss.

There is one thing about it, however. The bagging may have been "soaked" at one time, but there will be no kick on moisture now, for it has certainly dried out by this time.

A prominent member of the New York paper trade who has been laid up with grip and who this week made his first appearance since the event, while chatting with a friend said: "That reminds me. I must take my medicine." And then he took a small bottle out of one pocket and a lump of sugar out of another.

"What is it?" queried the friend.

"It's the best thing I ever struck," was the reply. "The bottle contains pure alcohol, and it simply knocks the grip completely out."

How is that for a remedy? Some people call it rock and rye, but they don't carry it in their pockets. However, as the remedy is good and the possessor of it happy, it must be all right.

A member of the paper trade refers to the threatened combination of news manufacturers as the "Great American Circus," and irreverently assigns various present owners to duties such as would be indicated on a five-sheet poster. If it is going to be a circus, it looks as though it was going to be a "three ringer," and one of the "greatest shows on earth."

Talking about that reminds me that the appraisments have all been made, and the thing is now simmering. It is said that the managers of the various plants have been pledged to secrecy by "cuss-words" until the whole matter is put in shape and the company ready to begin business.

Trade Talks.

Col. E. H. Haskell, Boston, Mass.—Business with me has been first class, and there is no reason to complain of the volume of trade. I have been having a very brisk call for the goods I handle. People generally I think expected too much of the opening months of this year, and in some cases the actual business done has not come up to their expectations, so that they feel disappointed.

W. H. Claflin, Boston, Mass.—Business with us has been very good, and taking the first three months of this year together we have no fault to find. It is somewhat spasmodic, however, and while one day the orders received will make a man believe that old-time business is back again, the next day's trade may make him think he has lost all his customers.

Robert W. Skinner, of Jones & Skinner, New York—There is a better tone to business; there is more inquiry, and the outlook at present is brighter than it has been for a long time; but we must not go too fast, for, you know, we can knock down in three months what it has taken as many years to build up. I think that one of the chief causes of our present business troubles has been the tariff of this country as demonstrated by the policy of the last two or three years; and as I think of the conditions into which the business interests of the country have been plunged, I feel very glad that I had no hand in contributing to the causes which are the result of it. I speak now either of general business or the paper trade particularly. It surely is not politic to drive business out of this country; yet that is just what is being done now. Other lines of trade are affected in the same manner, and the paper industry, which is closely connected with all other business interests, which disposes of its product to the shoe dealer, the dry goods man and the dealer in hardware, is affected as those various interests are affected. We are all bound together, and what affects one affects all. So if we want business in this country we must try to keep it here; we must as far as that is possible make laws which will retain it here, not those which will drive it away. It is the same with the country as it is with a business house. We have 1,600 customers upon our books; but would it be advisable for us to say to them: "You had better go and trade with John Smith"? Is that the way to do to keep or to increase business? How long would we remain in the trade if we acted that way? The Belgian paper dealer does not buy in the United States the paper with which are wrapped the goods sold by the merchants of that country. It is made there. So we also want the laws shaped in such a way that we can keep the business in our own country. If I smoke a cigar I have to pay for it, and besides the price of the cigar a tax which goes to the support of the general Government. If I prefer an imported cigar to a Key West I have to pay a tax for the preference. If I am not satisfied with a Californian wine and want a wine made abroad I must pay a tax upon the imported article. That, of course, brings up for discussion the question of a discriminating tax upon what are called the luxuries and the necessities of life. I do not dispute the justice of making me pay for using goods which are made abroad in preference to those made in the United States, and so far as the tax upon the necessities of life are concerned we know that one bill which was passed knocked off $50,000,000 taxes on one such commodity alone—sugar, one of the greatest and most common necessities of our existence. The point I want to make is this, that if we are taxed to support the Government of this country, the Government should stand by its business men. Another thing from which the paper trade is suffering more particularly is the attitude of the mills at the present time toward the middleman. The remarks of Mr. Munger upon this point, which I read in THE PAPER TRADE JOURNAL last week, express my views exactly. The mill not receiving from the dealer sufficient orders to take up its products goes out to consumers and solicits business for itself; but that is a practice which is caused by the existing business conditions and will stop when things change for the better. I think, however, that the sun is beginning to shine through the clouds. We are not doing as much business as we did in 1892; not only that either; there is a tapering off at both ends. There is a shrinkage not only in the volume of trade, but in the margin of profits. Because a man sells at a small profit, it does not mean also that his volume of business is correspondingly small, for what he loses by selling on a small margin, he may make up in the quantity of goods sold; but both the quantity and profit have shrunk, yet I think, as I have already said, that things are now improving.

Thomas Barrett, New York—I think that the general condition of business is improving, and that there is a better feeling existing in all lines of trade. We know this because we deal with the large manufacturers, and the most of them are very busy just now. This indicates that there is an improvement in trade, and I know of some factories which are employing just double the number of hands that they were employing a year ago. I think that so far as business in manilla wrappings is concerned, there is not much change, and for building papers there is a good demand. Did you know that more plans for the construction of new and the improvement of old buildings were filed in this city for last month than for any other month of March in any previous year? In comparison with March, 1894, it is four times as large. Let me give you another illustration. During the first week of April this year there were issued by the Building Department of the City of New York permits for the erection of new buildings to cost $2,000 000, while for the first week in April, 1894, these permits amounted to only $300,000. These are indications that there are to be better times all around. That is self evident; for, as building is indirectly connected with nearly all other lines, it may be taken as a good indication of the prospects of trade. There is reason for this spurt in building. One is that building materials are cheaper, and another is that money is also cheaper. These are the two things which are now stimulating building—cheaper money and cheaper raw material. No, I do not look for any boom in business, but there seem to me to be only two things to prevent a return of confidence to the business man and of business to the country. One is the settlement of the currency question, which bothers men so much that they do not know what to expect, and consequently what to do, and the other is the repeal of the obnoxious income tax—a measure which I believe Congress will repeal at its next session. It has a great many unjust features about it.

Changes, Removals and New Firms.

Esbon, Kan., has a new paper called *The Blunder*.

The *Breeze*, Bolivar, Pa., is the name of a new paper.

Warsaw, Ind., has a new daily paper called the *Onion*.

Nashville, Tenn., has a new paper called the *Evening Post*.

The *News*, Centerville, Pa., has suspended publication.

The *Daily News*, Franklin, Ind., has suspended publication.

The *Western Military Gazette*, Sacramento, Cal., is a new paper.

La Junta, Col., has two new daily papers called the *Times* and the *Tribune*.

The paper known as *Every Saturday*, Albany, N. Y., has suspended publication.

Fremont, Wash., has a new paper called the *Herald*, edited by Florence M. Stuart.

The *News* Publishing Company, Pittsburg, Pa., has been incorporated. Capital stock, $1,200.

The Commercial Printing Company, Minneapolis, Minn., has been incorporated by W. H. Williams, Chas. H. Knapp and C. J. Blanchard. Capital stock, $10,000.

Ottumwa, Ia., has a new paper called the *State Poultry Journal*, edited by Pierce & Kroeger.

The *Herald*, Cherokee, Ia., has been purchased by J. S. Crawford.

Kawanee, Ill., has a new paper called the *Evening Star*.

Ludlow, Mo., has a new paper called the *Graphic*.

The *Daily Acorn*, Canal Dover, Ohio, is a new paper.

The *Journal*, Markle, Ind., has been purchased by A. J. Horn.

The *Recorder*, Russell, Ia., has been purchased by E. H. Wilson.

The *News*, Doniphan, Mo., has been purchased by Jas. K. Langford.

The *News*, Port Austin, Mich., has been purchased by B. L. Gregory.

Osborn & Wilson have removed from 87 Warren street to 54 and 56 Franklin street, near Broadway.

The Geo. N. Lowrey Company, of New York, has been incorporated to print and publish publications relating to the cloth-

ing and furnishing trades, &c. Capital, $40,000, and directors, Geo. N. Lowrey, Geo. H. Abbott and Stephen S. Baker.

The *Campaign Leader*, Massillon, Ohio, is the name of a new paper published by Coxey & Browne.

The Standard Fibre Novelty Company, Port Huron, Mich., has been incorporated. Capital stock, $10,000.

The *Daily*, Palm Beach, Fla., is a new paper.

The *Daily Courier*, Auburn, Ind., is a new paper.

Las Vegas, Col., has a new paper called the *Examiner*.

Mound City, Ill., has a new paper called the *Messenger*.

Salt Lake City, Utah, has a new paper called the *New Star*.

The *Breeze*, Tower Hill, Ill., has been purchased by Rev. L. M. Doughty and John T. Smith.

Manchester, N. H., has a new tri-weekly journal called *L'Avenir National*, published by J. E. Bernier.

River Falls, Wis., has a new paper called the *Times*, edited by A. T. Churchill.

The *Standard*, Model City, N. Y., has been purchased by Augustine Davis.

Kankakee, Ill., has a new paper called the *Daily Sun*.

The *Record*, Wappinger's Falls, N. Y., is a new paper.

Meservey, Ia., has a new paper called the *Independent*.

The *Quill*, La Harpe, Ill., has been purchased by J. L. Gettings.

The *Register*, Bement, Ill., has been purchased by Fred. Unholz.

The *Public*, Clinton, Ill., has been purchased by F. E. Pinkerton.

The *Signal*, Napoleon, Ohio, has been purchased by E. A. Palmer.

The *Times*, Roby, Tex., has been purchased by Bullock & Thomas.

The *Advocate*, Crestline, Ohio, has been purchased by Allen G. Sprangle.

The *Speaker*, Sulphur Springs, Ark., has been purchased by B. A. Marcum.

The *Democrat*, Princeton, Ind., has been purchased by John C. Gorman.

The *News*, Lindsborg, Kan., has been purchased by Nelson Brothers.

The *Lash*, Elizabeth, N. J., is a new paper published by Evans & Schmidt.

The *Standard*, Wellington, Kan., has been purchased by John A. Kendall.

The *Sentinel*, Spring Valley, Ill., after a suspension of three months has resumed publication under the management of Ike Heller.

The *Evening Herald*, Macon, Ga., is a new paper, edited by W. G. F. Price, formerly of the New York *Herald*.

Atlantic City, N. J., has a new paper called the *Daily Press*, published by Walter E. Edge.

The *Times*, Bellows Falls, Vt., has been purchased by L. P. Thayer.

The *Gazette*, Thompsonville, Conn., has suspended publication.

The *Record*, Biddeford, Me., is a new paper.

Waverly, N. Y., has a new paper called the *Advocate*.

The *Record*, Lake City, Ia., has suspended publication.

The *Hard Times*, Wurtenburg, Pa., has suspended publication.

The *Star*, Pawnee City, Neb., has been leased to Flora Masters.

The *Evening World*, Henderson, Ky., has suspended publication.

Nebo, Ill., has a new paper called the *Signal*, published by W. S. and J. D. Rose.

The *Southern Pythian*, Jacksonville, Fla., is a new paper published by Brice & Johnson.

The *Farm and Fireside*, Lakeland, Fla., is a new paper published by McMullen & Clough.

Rance & Spaulding, stationers, &c., Clinton, Ont., have sold out to W. D. Fair, who took possession on April 1.

Uniontown, Ky., has a new paper called *Magnolia*.

The *Echo*, Packwood, Ia., has suspended publication.

J. O. Snell has opened a wall paper store at Herkimer, N. Y.

High Springs, Fla., has a new paper called the *Sentinel*.

The *Nickolas County Press*, Carlisle, Ky., is a new paper.

Indianapolis, Ind., has a new paper called the *Farm Journal*.

Brooks & Co., stationers and blank book manufacturers, Cleveland, Ohio, have changed their style to the Brooks Company.

The Aull Brothers Paper Company, paper dealer and manufacturer of specialties, Dayton, Ohio, has been incorporated under the same style.

The *Banner*, Greensburg, Kan., has suspended publication.

O. J. Holmes has opened a wall paper store at Helena, Mon.

The *Knight*, Milwaukee, Wis., is a new weekly illustrated paper.

The *Tribune*, Holton, Kan., has been purchased by Irwin Gabel.

The *Morning Democrat*, Albuquerque, N. Mex., has suspended publication.

The *Evening Item*, Fort Scott, Kan., is a new paper edited by Neil R. Ashby.

The *Daily Advertiser*, Findley, Ohio, is a new paper edited by Frank Gallaher.

The *Young Men's Herald*, Atlanta, Ga., is a new paper edited by E. L. Tedford.

The *Enterprise-Sentinel*, Sedalia, Mo., has been purchased by Oubry L. Wisker.

The *American Blade*, Muscatine, Ia., has suspended publication.

The *State*, Oklahoma City, Okla. Ter., has suspended publication.

The *Daily Hummer*, Willow Springs, Mo., has suspended publication.

Holden, Mo., has a new paper called the *Times*, published by Dahl & Daly.

The *Scurry County News*, Snyder, Tex., is a new paper published by McNeil & Dodson.

John H. Rice, Sedalia, Mo., has organized a stock company to publish the *Daily Capital*. Capital stock, $10,000.

The *Daily Record*, Blackwell, Okla. Ter., has suspended publication.

The *Star*, Stockbridge, Mass., is a new paper edited by Edgar J. Bliss.

The *Evening News*, Renovo, Pa., has suspended publication.

Washburn, Wis., has a new paper called the *Times*, edited by J. E. Jones.

The *Enterprise*, Iron City, Tenn., has suspended publication.

The *Union*, Newark, N. J., has been purchased by Frank R. Sherwood.

The *Review*, Alessandro, Cal., has suspended publication.

The *Times*, New Lisbon, Wis., is a new paper edited by Chas. A. Leicht.

The *Free Press*, Princeton, Ind., has removed to Oakland City, same State.

Scotia, Neb., has a new paper called the *Register*, edited by H. C. Waldrip.

A new publishing house has been started in Montreal, Que., under the style of Daniel & Cheese.

E. P. Walter, dealer in wall paper, &c., Kalamazoo, Mich., has sold out to Russell & Andrews.

Munger & Seaman, printers, Richfield Springs, N. Y., have been succeeded by F. E. Munger.

Hunter & Shoemaker, publishers, Enid Okla. Ter., have been succeeded by Buckles & Shoemaker.

De Rackin & King, publishers, Ritzville, Wash., have dissolved partnership.

The *Pioneer*, Tremont, Wash., is a new paper edited by Florence Stuart.

The *Daily Times*, Clarksville, Tenn., has purchased the Queen City *Herald*, and will consolidate it with the *Weekly Times*.

The *Canadian Police News-Weekly*, Toronto, Ont., is the name of a new publication edited by F. J. Hewitt.

The Augusta Lithograph Company, Augusta, Ga., has been organized and will apply for incorporation. Capital stock, $50,000.

The *Texas Immigrant and Railroader*, Houston, Tex., is the name of a new monthly paper, edited and published by Col. Thos. M. Bowers.

The Whedon & Webb Company, stationer, Los Angeles, Cal., has been incorporated to do a wholesale and retail book and stationery business. Capital stock, $24,000.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, April 12, 1895.

THE MONEY MARKET.—The stock market was quiet, but most of the moving shares closed at advanced figures. The call loan market was inactive on a basis of 2@2½ per cent. Time loans are steady. Rates are 3½@4 per cent. for sixty to ninety days and 4@5 per cent. for four to six months. Stock commission houses are not large borrowers. Commercial paper brokers report offerings better. Quotations are 4@4½ per cent. for sixty to ninety days' indorsed bills receivable, 4¼@5½ per cent. for four months' commission house and prime four months' single names, 5@6 per cent. for prime six months' and 6@7 per cent. for four to six months' good single names. Demand for paper is still cautious, because the larger banks do not know when their contracts with the bond syndicate will terminate and their accustomed lines of loanable funds be so released for use in the market. The foreign exchange market was quiet. Posted rates were $4.89 for sixty days and $4.90½ for sight. Actual rates were $4.88 @4.88½ for sixty days and $4.89¼@4.90 for sight.

THE PAPER TRADE.—As a whole the trade is moving a very fair quantity of goods, and one does not hear so great a complaint as to the volume of trade as to prices. The demand for News is good, and the market remains firm, manufacturers showing a more independent spirit than they have for a long time. Book papers are moving very fairly, as are also Writings. In Manillas some makers report the demand as very brisk, but prices are irregular.

JUTE BUTTS.—The market is quiet. We note sale 250 bales to arrive at 1.07½c.

WOOD PULP.—The call for Ground Wood keeps up very well, and production is not yet unrestricted. Prices range as they have.

WOOD FIBRE.—Chemical Fibre is moving fairly. Domestic Bleached Soda is quoted at 2½@2¾c., as to quality. Domestic Sulphite is quoted at 1⅞@2¼c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c. Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 1½@3.15c.; Bleached, do., 3½@4c.; Bleached Straw Pulp, 3.80c. This week there were imported at this port 130 tons of Chemical Fibre, being 63 tons from Antwerp and 67 tons from Hull.

FOREIGN RAGS AND PAPER STOCK.—Business continues along about as it has and there is no noticeable improvement. All of the Japanese Blues on spot have gone into store, and with the market cleared up the price has stiffened somewhat, and 1¼c. is now the price. Imports for the week aggregated 5,707 bales and 129 tons, being 1,699 bs. rags, 129 tons chemical fibre and 4,008 bs. manillas. Ports of shipment and quantities are as follows: Antwerp, 738 bs. rags, 63 tons chemical fibre, 916 bs. manillas; Bremen, 163 bs. rags, 694 bs. manillas; Bristol, 141 bs. manillas; Copenhagen, 378 bs. manillas; Dundee, 153 bs. manillas; Hamburg, 354 bs. rags; Hull, 250 bs. rags, 66 tons chemical fibre, 615 bs. manillas; Liverpool, 139 bs. rags, 396 bs. manillas; London, 62 bs. rags, 395 bs. manillas; Marseilles, 155 bs. rags, 715 bs. manillas.

DOMESTIC RAGS.—There is no specially new feature in the domestic rag market. There is a moderate movement and prices are not materially changed.

BAGGING, &c.—A lot of 900 tons of Gunny Bagging, which has been in pledge to banks, and which has been a threat to the market for a long time, was moved this week, all of it going to one party. This has had a good effect on the market, and cleans up the supply here. The quotation to arrive remains at 1.05c. Mixed Bagging ranges all the way from 85@95c., and Wool Tares are quoted at 1.15c., ex store, at which they are firmly held. Manilla imports for the week aggregated 4,008 bales, being 916 bs. from Antwerp, 694 bs. from Bremen, 141 bs. from Bristol, 378 bs. from Copenhagen, 153 bs. from Dundee, 615 bs. from Liverpool, 396 bs. from London, and 715 bs. from Marseilles.

OLD PAPERS.—There is a moderate call for stock. We quote: No. 1 Hard White Shavings, 2½@2¾c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1¾@2c.; Old Ledgers, 2c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1½c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, 90c.; No. 1 Manillas, ordinary, 75c.; No. 2 Manillas, 60c.; Light Book Stock, 60c.; Folded News (over issues), 50@55c.; Mixed Papers, 35c.; Commons, 25@30c.; Straw Clippings, 45c.; Binders' do., 45c.

STRAW.—The market is quiet but steady. We quote: Long Rye at 50@60c.; Short Rye at 40@50c.; Wheat at 40@45c.; Oat at 40@45c.

ROSINS.—Low grades are a little easier. We quote: Common to Good Strained, $1.77½@1.82½; E, $1.85; F, $1.90; G, $2; H, $2.25@2.30; I, $2.55@2.60; K, $2.70; M, $3.05@3.10; N, $3.20; W G, $3.40@3.45.

CHEMICALS.—There is a somewhat better all round movement in paper makers' chemicals. Under date of March 27 J. P. Brunner & Co. speak as follows of the Liverpool market: "There is a little more business going on in chemicals, but the demand is still below the average. Soda Ash is selling in a moderate way, but not at all active. Spot range for tierces is about: Leblanc Ash, 48 per cent., £3 10s. @3 15s. per ton; 58 per cent., £3 15s.@4 per ton, net cash. Ammonia Ash, 48 per cent., £3@3 5s. per ton; 58 per cent., £3 5s.@3 10s. per ton; bags, 5s. per ton less, net cash. Soda Crystals are quiet at £3 5s.@2 4s. 6d. per ton, less 5 per cent. Caustic Soda in better request, but orders are still far from plentiful. Spot quotations are: 60 per cent., £6 10s. per ton; 70 per cent., £7 10s. per ton; 74 per cent., £8 10s. per ton; 76 per cent., £9 10s. per ton, net cash. Bleaching Powder is rather dull, and for hardwood packages prices vary from £7@7 7s. 6d. per ton, net cash, according to export market." In the local market Bleaching Powder continues to be scarce, and during the week there have been sales at 2c. The small lot on the Cufic, due in a day or two, is held at 1.95@2c. Alkali is quiet, with future shipments having the greater attention. Casks are quoted at 1@1½c., according to quantity. Caustic is in moderate trade, and is quoted at 2.10c. in five and ten drum lots. During the week there have been sales of Bleach at 1.95c. @2c.; 10 tons Soda Ash at 1¾c.; Caustic Soda, 2.10c., and Alkali, 1½c.

CHINA CLAY.—There is no abatement in the demand, and all arrivals by steamers are quickly absorbed, thus leaving the market almost bare of stocks for prompt delivery. Sales are reported of 800 casks for arrival, at $11@14 per ton, as to make and quantity. Store parcels are held firm, at $17@18 per ton, as to grade and quantity, with a fair jobbing trade reported.

TWINES.—There is a moderate trade in progress. We quote: Sisal Hay Rope, 5 @6c.; Sisal Lath Yarn, fine, 9¼c., and medium, 9c.; Jute Lines, 7½c.; Jute Ready, 7@7½c.; New Zealand Hay Rope, 6¾@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¾c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c.; Russian Hemp Hay Rope, 9c.

COAL.—The representatives of the Anthracite interests are to get together to-day and to-morrow and make allotment of percentages, &c., the satisfactory arrangement of which it is expected will steady the market and bring values nearer to circular prices.

EDWIN BUTTERWORTH & CO.
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing
Wood Pulp, Moist and Air Dry Pulp,
Soda and Ground Pulp,
83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
JAMES FIRNIE, A. S. DEMAREST, } Managers.

WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled for durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	85	@	1.00
White tissue, 24×36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	8½
Manillas, No. 1, heavy weight	6½	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2½	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	44.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	72	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	60
24×36, from 24 to 26 lbs. ℔ rm	....	@	50
22×32, from 24 to 26 lbs. ℔ rm	50	@	....
20×30, 21 lbs., ℔ rm	..	@	44
20×30, from 14 to 17 lbs. ℔ rm	30	@	....
16×22, from 12 to 13 lbs. ℔ rm	95	@	....
18×28	....	@	12
15×20, 10 lbs. ℔ rm	....	@	18
15×20, from 7 to 8½ lbs. ℔ rm	....	@	15
14×18	....	@	12
12×16	....	@	11
11×15	....	@	10
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1½	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12×18	....	@	13
14×20	....	@	18
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	43.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Woolen Rags.

Comforter Stock	8	@	9
White Woolens	9	@	10
Blue Gray Stockings	7	@	8
White Stockings	15	@	16
Blue Flannels	6	@	7
Reds, old	7½	@	8
Reds, new Shirt Clippings	20	@	21
Mixed Softs, free of Carpets	7½	@	8
Seamed Cloth	3½	@	4
Skirted Cloth	2½	@	2
New Cloth Clips	9	@	11
New Satinets, clean stock	1½	@	1½
Satinets, old	65	@	75
Seams	1	@	1½
Delaines, stripped for extract	2½	@	3½
Blankets, Woolen	2½	@	2¾
Wool Carpets	3	@	....
White Linseys	3	@	3¼
Mixed Linseys	1½	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	5½	@	6
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4	@	4¼
City Whites, No. 1	3¼	@	...
New Seconds, light	2¾	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	1½	@	1.15
Cotton Canvas, No. 1	3½	@	....
Linen Canvas, No. 1	....	@	3
Country Mixed, free of Woolens	60	@	75
Seconds (City)	30	@	50
Colors, ℔ 100 lbs	30	@	40
Manilla Rope	2	@	2¼
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	....	@	1¼
Mixed Bagging, No. 1	80	@	90
Burlap Bagging, No. 1	....	@	1¼
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	2½	@	....
Jute Waste	¾	@	1

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3¼	@	....
Hard White Shavings, No. 1	2¾	@	3
Soft White Shavings, strictly free from wood	2.15	@	....
Soft White Shavings, ordinary	1¾	@	2
Mixed Shavings, part white	1	@	1½
Ledger and Writing	2	@	2.10
Solid Stock	....	@	1¾
Book Stock, No. 1 light	....	@	1¾
Old Newspapers	40	@	....
Manillas No. 1	....	@	1.15
Manillas No. 2	80	@	....
Mixed Manillas	60	@	....
Hardwares, No. 1	65	@	....
Mixed Papers	40	@	....
Commons	26	@	30
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	45	@	50

English Rags, &c.

New Cuttings, cotton	5	@	3¼
London Pines, cotton	3½	@	4
Outshots, cotton	2¾	@	3
Seconds	1½	@	1.65
Thirds	1¼	@	1½
New Print Tabs	2½	@	3
Checks and Blues	2¾	@	2½
Light Prints	1½	@	1½
Light Fustians	2	@	2½
Dark Fustians	1¾	@	1¾
Black Calicoes	1¼	@	1¼
First Canvas Linen	3½	@	4
Second Canvas Linen	3	@	....
Gunny Bagging, No. 1	1¾	@	1½
Gunny Bagging, No. 2	1.65	@	1.80
Burlaps Bagging, No. 1	....	@	1.60
Rope, Manilla	2½	@	....
Rope, Manilla, tarred	....	@	2
Jute Threads	....	@	1¾
Clean Jute Ropes	2	@	2½
Mixed Rope	1½	@	1¾
Flax Tow	1¾	@	1½

Hamburg Rags, &c.

N S C, New Shirt Cuttings	....	@	6
S P F F F, No. 1 Linens	....	@	5
S P F F, No. 2 Linens	....	@	4½
S P F, No. 3 Linens	....	@	3
P G, No. 4 Linens	....	@	2½
P F, No. 5 Linens	2	@	....
Extra Fine Blue Linen, light color	2¼	@	....
L F B, Blue Linens	2½	@	....
C S P F F F, No. 1 Cottons	....	@	4
C S P F F, No. 2 Cottons	....	@	3½
C S P F, No. 3 Cottons	2½	@	....
C C C, Colored Cottons	....	@	1
C F X, Low grade Cottons	½	@	1
Extra Fine Blue Cottons	....	@	1⅞

English Old Papers and Shavings.

Hard Shavings, No. 1	2	@	....
Soft Shavings, No. 1	2¼	@	2½
White and Colored Shavings, No. 1	1¾	@	1¾
White and Colored Shavings, No. 2	1	@	1½
Cream Post Shavings	2½	@	....
Paper Collar Cuttings	....	@	2
Briefs and Letters	1¾	@	1¾
Books and Pamphlets	1.10	@	....
Old Newspapers	....	@	....
Broken News and Letters	¾	@	1
Old Blank Books	2¼	@	2½
White and Buff Railway Sheets	1¼	@	....

Pulps and Fibres.

Ground Wood, domestic, delivered	1	@	1.35
Ground Wood, foreign, ex dock	....	@	....
Soda Fibre, domestic, unbleached	....	@	....
Soda Fibre, domestic, bleached	3	@	3½
Soda Fibre, foreign, unbleached	2.85	@	3
Soda Fibre, foreign, bleached	3½	@	....
Sulphite, domestic, unbleached	2.60	@	3
Sulphite, domestic, bleached	3½	@	3¾
Sulphite, foreign, unbleached	3	@	3½
Sulphite, foreign, bleached	4	@	4¼

Japanese Rags.

Blues, Hiogo	1.45	@	....

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	....	1	@ 1.20
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	3¼
Alum, porous	2¾	@	2½
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2½
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	1.85	@	1⅞
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.20	@	2.30
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3½
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	35
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.82½	@	1.90
Rosins, E, ℔ bbl	1.90	@	....
Rosins, F, ℔ bbl	1.95	@	2.00
Rosins, G, ℔ bbl	2.15	@	2.25
Rosins, H, ℔ bbl	2.40	@	....
Rosins, I, ℔ bbl	2.65	@	....
Rosins, K, ℔ bbl	....	@	2.85
Rosins, M, ℔ bbl	....	@	3.15
Rosins, N, ℔ bbl	....	@	3.40
Rosins, W G, ℔ bbl	3.50	@	....
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2½
Sulphuric Acid, 66 ℔ cent	1	@	1½
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

WANTED—A COMPETENT FOREMAN TO run a new straw mill in the West; would give the right man a liberal share in the net profits of the business. Address H., care of Paper Trade Journal.

WANTED—BY YOUNG MAN OF EXPERIence in managing mills, position as manager in wood manilla or manilla tissue mill; good references. Address S., care Journal.

WANTED—SITUATION AS SUPERINTENDent; have had over ten years' experience; book, news, manilla or flats; well up to the times; best references. B. B. G., care Journal.

WANTED—POSITION AS FOREMAN OF rag room; long experience of all kinds of foreign and domestic rag stock; good references. RAG ROOM, care of Journal.

DRAUGHTSMAN WANTED—A FIRST-class draughtsman familiar with paper machinery work; references required. Address DRAUGHTSMAN, care of this office.

WANTED—A MAN NOT OVER THIRTY-FIVE years old to take charge of repairs in a paper mill. Address B., care of Paper Trade Journal.

WANTED POSITION—SUPERINTENDENT mill making writing, book, manilla, news, fibre or express papers; full knowledge soda process; have been paper maker for two largest mills in country last four years. A., care Journal.

SITUATION WANTED,

By young married man, as boss in color department; understands mixing colors for fine colored, white plated and chromo papers, enameled and glazed, ivories and satins for lithograph, bristols, boxboards and wedding cards; can give good reference. Apply to COLOR MIXER,
Post Office Box 818, Holyoke, Mass.

FOR SALE—$4,000 DOWN WILL BUY A PAPER mill now running and making money. I. S. DILLINGHAM, 67 Federal Street, Boston.

AN IMPORTANT BOHEMIAN CHINA CLAY (kaolin) mine desires to enter into connection with a first-class house, well posted up in American paper mills, for the sole sale of its celebrated china clay (kaolin) for the States; the product is acknowledged the best and universally used. Apply to R. W. 2132, care of Haasenstein & Vogler, A. G., Hamburg.

PAPER MILL FOR SALE, WITH PROFITable orders guaranteed to buyer of the property. Address I. S. DILLINGHAM, 67 Federal street, Boston.

FOR SALE—A SECOND-HAND COPY OF HOFmann's Treatise on Paper Making, in first-class condition; edition of 1873. For further particulars address SACRIFICE, care of The Paper Trade Journal

PAPER MILL
For Sale or To Let.

Good water power and location; also large building and power for any manufacturing. Apply to
W. K. DANA,
Westbrook, Me.

FOR SALE.

One second-hand 22x48 Wheelock Engine, latest valve pattern, only used short time and taken out to make room for larger engine; also one Deane Vacuum Condenser for above engine; either or both will be sold cheap.
AGAWAM PAPER CO.,
Mittineague, Mass.

FOR SALE.

One 72 inch Paper Machine, with thirty-three dryers and three cylinders, made by Black & Clawson Co.; also three boilers; also steam engine; also three beaters; also digesters, shafts, pulleys, &c. All machinery necessary for the operation of a paper mill. Address
JAMES A. BRIGGS,
32 Nassau Street. New York.

FOR SALE.

One Emerson and one Smith & Winchester Jordan Engine, in good condition; taken out to make room for Marshall perfecting engines.
CROCKER MFG. CO.,
Holyoke, Mass.

FOR SALE.

Two Diaphragm Screens for six plates, 12x40.
Two Cylinder Molds, 36x90 in.
Two rubber covered Bottom Press Rolls, 16x88 in.
Two rubber Couch Rolls, 15x90 in.
All entirely new.
BLACK & CLAWSON CO.,
Hamilton, Ohio.

PAPER MILL PROPERTY FOR SALE

In New Baltimore, Greene County, N. Y., situated one mile from boat landing on Hudson River, two miles from railroad station West Shore Railroad; formerly owned by Croswell & Parsons; two engine mill; good water power; house and barn, with five acres of land. On account of illness will sell for $2,500 cash. STEPHEN PARSONS, New Baltimore, N. Y.

FOR SALE.

Two second-hand Jordans.
One Marshall Engine.
Two Rotaries, 6 x 20 ft.
Two Daniels Rag Cutters.
Two Revolving Paper Cutters.
All guaranteed in good condition; nearly new.
NOBLE & FOSS MACHINE CO.,
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PAPER MILL
For Sale or Rent.

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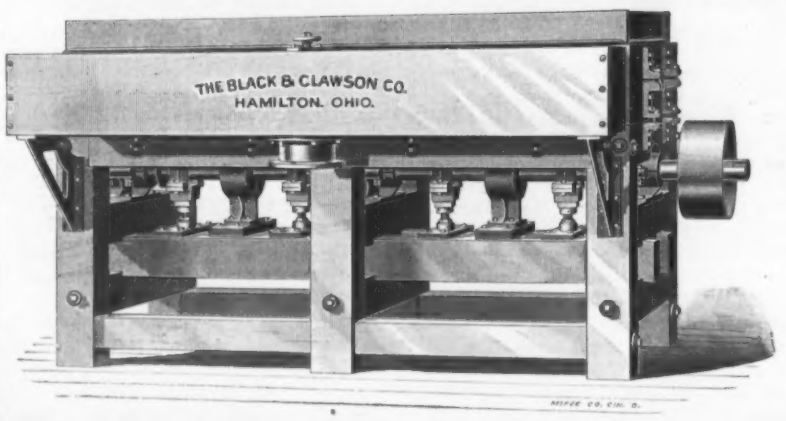
THE BLACK & CLAWSON CO., MANUFACTURERS OF Paper Mill Machinery,



FOURDRINIER,
HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.

DIAPHRAGM SCREENS. *Over Forty now in use.*

Jordan Engines. Jordan Engines Refilled. Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

REVOLVING REELS AND STACK REELS.

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We Make the Only Perfect Dryer. *THE BLACK & CLAWSON CO., Hamilton, Ohio.*

MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1894
C. F. HANMER, Secretary.

WE WANT AGENTS

to sell our celebrated

ELECTRIC VENTILATOR

to mill owners. Fine side line.

TROY SHEET METAL CO., Troy, N. Y.

NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

MACHINERY FOR SALE.

One 82 inch Fourdrinier machine complete, with press rolls; nine 36x78 inch dryers; stack of chilled rolls; reel, cone pulley cutter; Marshall driving train; made in 1887 and used three years.

One 76 inch Fourdrinier machine which takes 42 foot wire; gun metal press rolls; nine 48x72 inch face dryers; heavy stack chilled rolls; reel, cutter and Manning winder. Machine set up as last used.

One 54 inch cylinder machine; two molds, vat, first and second presses; seven iron dryers, 28x54 inch face; new revolving reel; cone pulley cutter.

Two new Jones double lighter beating and washing engines; iron rolls 52 inch face.

One 74 inch double cylinder machine, consisting of screens, two molds, 30x74 inches; first and second presses; wood and iron rolls; fifteen iron dryers, 36x72 inches; stack of nine chilled rolls, revolving reel, slitter and winder, with Marshall driving train.

One 56 inch double cylinder machine, consisting of knocker screen, two molds, 30x56 inches; good sound vat; first and second presses; three iron and one wood roll, 12x55 inches; nine iron dryers, 36x54 inches, with heavy frames, siphon packing boxes and patent exhaust; one stack of five chilled rolls, two 12, three 7x54 inch face; one cone pulley cutter, with 54 inch knife; upright reel; in excellent condition.

Two Stout, Mills & Temple double lighter 1,000 pound beaters, rolls 48 inch face and 55 inches diameter; tub, 3 inches cypress, 20 feet 9 inches long and 9 feet wide, with one cylinder washer to each.

One Pusey & Jones slide valve engine, 15x26 inches; 12x19½ inch face wheel, and shaft, 8¼ inches.

One Chambers Brothers 16x36 inch slide valve engine, with wheel, 12 feet by 24 inches.

One large sized heavy patent Marshall engine.

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The name of the Chicago, Milwaukee & St. Paul Railway has long been identified with practical measures for the general upbuilding of its territory and the promotion of its commerce, hence manufacturers have an assurance that they will find themselves at home on the company's lines.

The Chicago, Milwaukee & St. Paul Railway Company owns and operates 6,154 miles (9,900 kilometres) of railway, exclusive of second track, connecting track or sidings. The eight States traversed by the company—Illinois, Wisconsin, Northern Michigan, Iowa, Missouri, Minnesota, South Dakota and North Dakota—possess, in addition to the advantages of raw material and proximity to markets, that which is the prime factor in the industrial success of a territory—a people who form one live and thriving community of business men, in whose midst it is safe and profitable to settle. Many towns on the line are prepared to treat very favorably with manufacturers who would locate in their vicinity.

Mines of coal, iron, copper, lead and zinc, forests of soft and hard wood, quarries, clays of all kinds, tan bark, flax and other raw materials exist in its territory, in addition to the vast agricultural resources.

A number of new factories have been induced to locate—largely through the instrumentality of this company—at towns on its lines. The central position of the States traversed by the Chicago, Milwaukee & St. Paul Railway makes it possible to command all the markets of the United States. The trend of manufacturing is westward. Nothing should delay enterprising manufacturers from investigating. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

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Industrial Commissioner, C., M. & St. P. R'y,
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DOUBLE, HORIZONTAL and INVERTED.
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Revolving Paper Cutters,
Rag Cutters, Cylinder Machines,
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Fan and Stuff Pumps,
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RIEGELSVILLE, WARREN CO., N. J.,

Manufacturers of THEIR IMPROVED GIANT RAG CUTTERS,

Fly Bars, Bed Plates, Rag Cutter, Barker and Chipper Knives; also Paper Trimming Knives.

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SIMPLE AND AUTOMATIC.

Designed to Meet the Requirements of Intercommunication in Mills and Factories, and Elsewhere.

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THE CURTIS Steam & Grease SEPARATOR

Is a thoroughly practical instrument, made on scientific principles.

IT WILL separate water from steam, and so deflect the water that it cannot possibly get back into the current.

IT WILL separate grease and sediment from exhaust steam. The construction of the Separator is such that the grease may be drawn off at intervals, and the sediment removed by taking off the cover which removes the float and exposes the interior.

The General Use of this Separator is Evidence of its Superiority.

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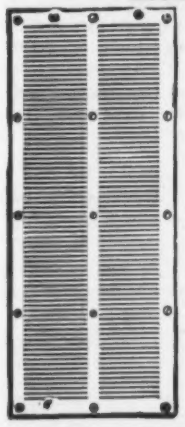

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—OF—

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REPAIRING

OLD SCREEN PLATES

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Paper Machinery.

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BEATING ENGINE.

THE ROACH PATENT METALLIC STEAM JOINT For Paper Mill Dryers.

Four thousand now in use. Does away with Packing the Dryers; no leakage of steam; requires no attention and will last for years. Medal awarded at World's Fair. Send for circular and price list.

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Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

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FOR MILLS, FACTORIES AND DYE HOUSES.

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Three Different Machines

—FOR—

Strength, Thickness and Weight.

A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

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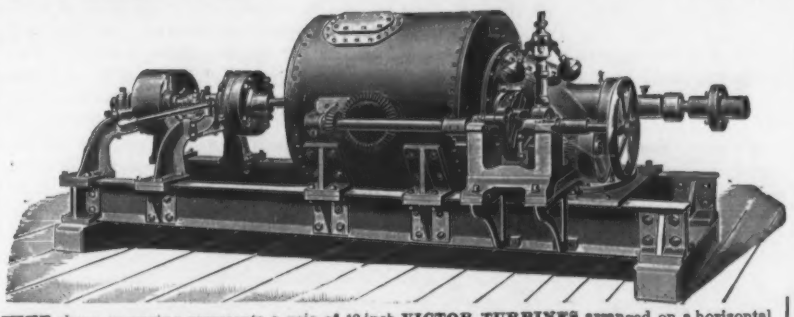
All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

THE VICTOR TURBINE.

UPRIGHT or HORIZONTAL.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines, either single or in pairs, on horizontal shafts, and where the situation admits of their use we recommend them.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

CYLINDER OR REGISTER ***GATE.***

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch	18.06	30.17	.8962
17½ inch	17.96	36.85	.8930
20 inch	18.21	46.00	.8582
25 inch	17.90	68.62	.8584
30 inch	11.05	52.54	.8676
35 inch	17.29	133.19	.8497
40 inch	16.49	148.98	.8253
48 inch	15.51	179.29	.8202

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

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THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

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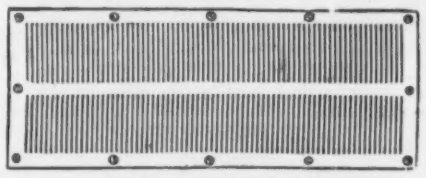
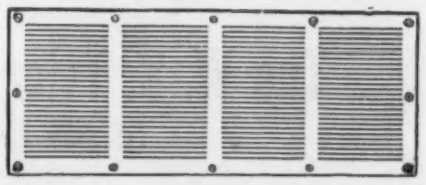
THE STILWELL-BIERCE & SMITH-VAILE CO., DAYTON, OHIO, U. S. A.

ANNANDALE

Screen Plate Co.

PATERSON, N. J.





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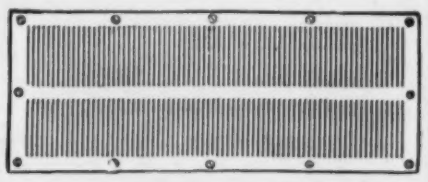

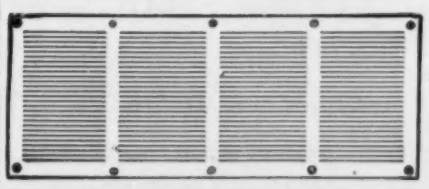

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Write for Prices and Gauges.

All Work Warranted.

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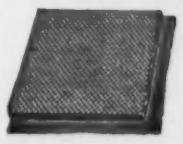

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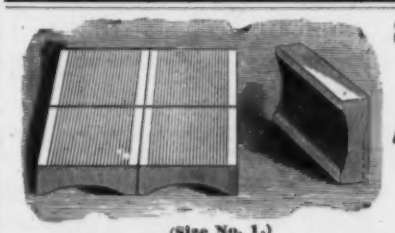
Asbestos Prepared Roofings.

(Specially adapted to Paper Mills).

Chicago, Ill. **H. F. WATSON COMPANY,** Erie, Pa.



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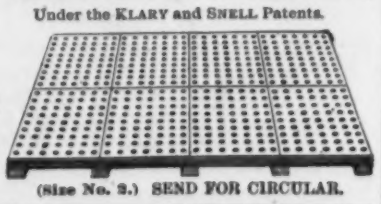

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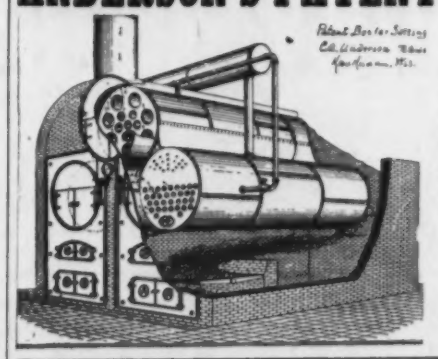
ANDERSON'S PATENT BOILER SETTING.



Practical Test.

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C. A. ANDERSON, Esq., Kaukauna, Wis.:

DEAR SIR—We have been using your Patent Feed Water Boiler eleven months and it has given us perfect satisfaction. We are perfectly satisfied that it saves us from 15 to 20 per cent. fuel; it purifies the feed water and keeps the lower boilers free from scale, and is so simply and durably constructed that it causes no extra trouble to run it. We can heartily recommend your Boiler to anyone wishing to improve their steam plant.

(Dictated.) WINNEBAGO PAPER MILLS, W. L. DAVIS, Secy. and Treas.

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KAUKAUNA, WIS., U. S. A.

PAPER ROLL PLUGS.

We make a specialty of the manufacture of PLUGS for Roll Paper of all sizes and descriptions. Write for samples and prices.

MUNCIE WOOD WORKING CO., Muncie, Ind.

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may save lives and money and avoid annoying damage suits by the use of our

GIANT SAFETY COLLARS,

manufactured, solid or split, solely by

THE GOUVERNEUR MACHINE CO.,

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We are also manufacturers of Talc and Stone Mill Machinery and Mine and Quarry Equipment.

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SPECIALTIES:

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BUILT UNDER OUR OWN SUPERVISION.

Power Pumps for all Purposes.

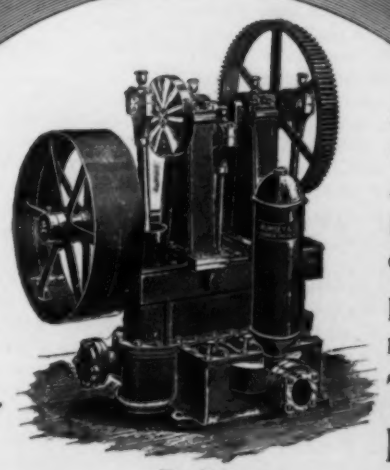

Fig. 669.

Some Pumps are Better than Others.

RUMSEY'S Pumps are THE BEST.

RUMSEY & CO., Limited,

Seneca Falls, N. Y., U. S. A. **35 Dey St., NEW YORK.**

Send for Catalogue and Prices. Correspondence Solicited.

HIGH GRADE CENTRIFUGALS.

BUILT ACCORDING TO .... NEW IDEAS.

Run in either direction, giving highest efficiency.

MANUFACTURED BY

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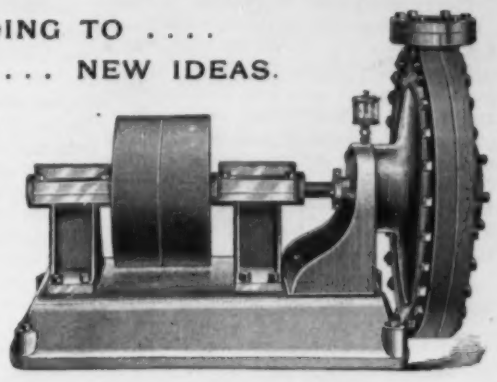
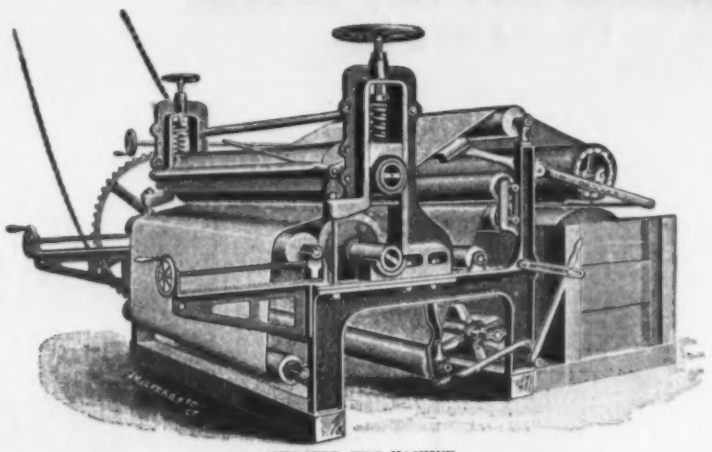


TREVOR MANUFACTURING CO., LOCKPORT, N. Y.

Manufacturers of

IMPROVED WOOD PULP MACHINERY.



IMPROVED WET MACHINE.

"Niagara" Grinders, Double and Single Splitters, the "Trevor" Improved Wet Machines, "1890" and "Giant" Barkers, Cross Sawing Machines, Drag Saw Machines, Improved Wood Slabbing and Sawing Machines, Knot Borers, Stuff Pumps, Double and Triple Pumps, for general use in Pulp and Paper Mills.

Write for Catalogue "C" and Discounts. Address

TREVOR MANUFACTURING CO., - LOCKPORT, N. Y.

Manufacturing News.

EASTERN STATES.

The Uncas Paper Company, Norwich, Conn., is about to add ten dryers to its machine, making thirty-five in all. The company will put in a new press and a 1,500 pound beating engine. These changes will enable the company to turn off 18 tons per day and to keep up with its increasing business.

The report that Wilkinson Brothers & Co., Shelton, Conn., had decided to enlarge their mills is incorrect. The firm has had the matter under consideration, but has not reached a decision.

The new boiler house for the Hartford Gas Light Company, Gen. John P. Harbison, general manager, at Hartford, Conn., has been completed by the Berlin Iron Bridge Company, of East Berlin, Conn. The roof is anti-condensation.

A. Hutchins has sold his box factory business at Mechanic Falls, Me., to Hobson & Thompson. Over thirty men are employed by this concern, and orders are said to be coming in faster than can be filled. Hobson & Thompson contemplate enlarging their factory at an early day.

The new fibre mill at Howland Falls, Me., was started up on April 4. The mill is of the latest improved construction and is built of Brewer brick. The main building is 150x60 feet, the digester room is 110x28 feet, blow tank house 110x28 feet, wood room 120x40 feet, acid department 79x75 feet, boiler house 62x58 feet, power house 45x28, feet and store house 160x65 feet. The mill is heated by hot air and lighted by 225 electric lamps. The various departments are separated by brick walls and fireproof doors, while the whole mill is equipped with a system of automatic sprinklers.

Excavations have begun for the addition to the Pepperell Card and Paper Company's mill, East Pepperell, Mass., and the work of moving the spur track to give the necessary room is in progress. The present drying room, which is 192x60 feet, and occupies the top floor of the mill, is to be enlarged to 300x60 feet, making an addition of 102x60 feet, which will extend over the track if there is not sufficient room otherwise. Tyler & Leeds have the contract for furnishing the stonework and John O. Bennett and Charles S. Parker will have charge of the brickwork. Charles H. Miller will put in the woodwork. This company is doing an extensive business at present, being obliged to run overtime to keep up with its orders.

The Riverside Paper Company, Glastonbury, Conn., has received its new dryers and will now be able to make more rapid shipments, as the drying facilities of the mill will be greatly increased.

MIDDLE STATES.

The Downingtown Manufacturing Company, Downingtown, Pa., is very busy, and has been since the first of the year. This company was awarded the contract for the machinery for the new paper mill at Hoboken, N. J., which is fast nearing completion. The shops of the company have been doubled in size and capacity within the past five years, and have every facility, not only for the manufacture of heavy machinery, but also for handling and shipping the same with ease and promptness.

The Remington Paper Company, Watertown, N. Y., has put in nine of the "Gotham" screens built by the Brownville Iron Works, Brownville, N. Y. These screens are disposed as follows: Two on the paper machines, six on the sulphite mill and one for use on ground wood.

The factory of the Standard Wall Paper Company, at Baker's Falls, N. Y., will be ready to operate by June 1. The factory when completed will be 300x90 feet, three stories high and an equal number of floors, having a total of 81,000 square feet of space. An annex, 50x25 feet, will also be erected. The construction of the two upper floors is now being pushed rapidly forward, 100 men being employed in the work. The building is practically fireproof, being constructed on the slow burning principle; the smallest timber in it will be 10x12 inches, and all timber connections are of iron, to prevent decay, so that there are no tenons or mortices in the entire structure. All floor and roof planks are of 3 inch hard pine, planed and matched. The annex will be three stories in height. The first floor will be used as a boiler room, and the floors above will be utilized as the chemical laboratory, which will be an important department in the industry. The boiler room is fireproof. The ceiling is constructed of iron beams and arches of hollow firebrick. The fire stack will be built of brick and will be 100 feet in height. Two boilers of 100 horse power each will furnish the motive power. The paper to be used at the factory will be manufactured by the Allen Brothers Company.

All six of George West's pulp and paper mills at Ballston, N. Y., and vicinity, and the mills of the National Folding Box Company and the axe and scythe factories of the American Axe and Tool Company were compelled to shut down on Tuesday on account of the high water in the Kayaderosseras River, which furnishes their power.

The paper mill at Stanley, N. J., which has been shut down since last summer, will start up in about a week.

The Spring Grove Paper Mill, Spring Forge, Pa., is to be improved by another large building. The annex will be utilized as a finishing room. A new office will also be added.

The Gould Paper Company, Port Leyden, N. Y., has given its third order for a "Gotham" screen, which has been put to work in connection with the paper machine.

The New Jersey Magnetic Concentrating Company is putting up a new dryer plant at Lyon Mountain, N. Y., which will be entirely of iron, designed and built by the Berlin Iron Bridge Company, East Berlin, Conn.

The Pusey & Jones Company, Wilmington, Del., shipped on Saturday last a carload of paper making machinery to the Webster & King Manufacturing Company, Portland, Me.

The High Falls Sulphite Pulp and Mining Company, Potsdam, N. Y., has put in its fourth digester, which increases the capacity of its mill to 20 tons of fibre per day. Two more sulphur burners will be added, and instead of mining the pyrites by hand drills an air compressor will be put in to run two compressed air drills, which can get out 50 tons of pyrites a day.

The remodeling of the old Jones bell foundry, at the corner of First and Adams streets, Troy, N. Y., which will be occupied by a firm which intends to manufacture felt and tar paper, has begun. Ground has been broken for a new boiler house. It is expected that operations will be commenced about May 15.

It is now reported that the Bennington Falls Pulp Company, Middle Falls, N. Y., will rebuild its burned mill and increase the capacity.

WESTERN STATES.

The Dayton Globe Iron Works Company, Dayton, Ohio, recently patented and placed upon the market a new beating engine with double the capacity of the engine formerly made by this concern. The construction of the new engine is exceedingly simple. This fact, together with double efficiency, will doubtless make for it a ready market with paper mill owners. The company will respond to inquiries for details.

A factory to make stationery, fancy colored paper, playing cards, paper boxes, &c., will be located at Elwood, Ind. It will employ 100 hands.

The Centralia Pulp and Water Power Company, Centralia, Wis., has put in three "Gotham" screens, built by the Brownville (N. Y.) Iron Works. Two of these screens are to be used with the paper machines and the third is to run on wood pulp.

The grand jury at Delaware, Ohio, has found an indictment against Max H. Lowenstein, owner of the Stratford Paper Mills, for polluting the water of the Olentangy River by the refuse of the strawboard mill. Complaint was made last fall about this matter, as the river banks were covered with dead fish as far down as the Beaver dam, supposed to have been killed by the impure water. The game warden, G. W. Bailey, investigated and took the matter before the grand jury.

The American Straw Board Company has started up its mill at Kokomo, Ind.

The Red River Paper Mill at Fergus Falls, Minn., and a half interest in the Red River power have been sold by B. F. Nelson, of Minneapolis, to the Fergus Manufacturing Company, and the mill will be converted into a sash and door factory.

The Manitowoc Boiler Works, Manitowoc, Wis., are building a digester for the Badger Paper Company, of Kaukauna.

SOUTHERN STATES.

The paper mill belonging to the estate of the late Daniel Beckley, Beckleysville, Md., together with nine dwelling houses, and 190 acres of farm land, has been sold at public sale by the administrators to Mrs. Benson, daughter of the deceased, for $12,400.

The paper mill at Hoffmanville, Md., has been shut down. New machinery is to be put in, and it is expected that the mill will be started up again some time next month.

CANADA.

The Sault Ste Marie (Ont.) Pulp and Paper Company has secured 50 square miles of pulp wood territory on the north shore of Lake Superior. It has completed cutting for this season and is preparing to drive its lumber when the ice breaks up.

The Tagono Water and Light Company, Sault Ste. Marie, Ont., has secured exemption from taxation for twenty years, and will supply the town with electric light, water, motive power, sewerage, &c. A scale of water rates for lessees of mill sites and power has been established, and these manufacturers will also be exempt from taxation for twenty years. This company is an adjunct of the company which is to build large fibre and paper mills at the "Soo."

Obituary.

W. JENNINGS DEMOREST.

W. Jennings Demorest, founder and publisher of *Demorest's Family Magazine*, died at his home, 21 East Fifty-seventh street, New York, on April 9. The cause of his death was pneumonia.

Mr. Demorest was born in New York on June 10, 1822. He became engaged in the publishing business in 1860, when he was editor and publisher of what was afterward *Demorest's Illustrated News*. During war times he issued the *Phunniest of Phun*, an anti-slavery publication. He also issued several other publications and was a member of the firm of J. J. Little & Co., printers.

To the present generation Mr. Demorest has been widely known as a Prohibitionist. He organized the National Prohibition Bureau in 1885 and later on the Constitutional League.

In 1845 he married Margaret W. Poole who died in 1857, and he then married Ellen Louise Curtis, of Saratoga Springs, who, with four children, two sons and two daughters, survives him.

Frank B. Hobart died on April 9 of pneumonia at his home, No. 80 Charles street, New York. He was the head of the firm of Hobart & Co., wholesale twine merchants, No. 92 White street, where he had been in business fifteen years. He was forty-seven years old, and leaves a widow and two daughters. He was born in Branton, Mass., but had been for twenty-five years a resident of this city.

Col. Henry A. Starr died on March 25 at his home in Milwaukee, Wis., in his sixty-fifth year. A native of New York, he went to Wisconsin at the time that his father, Elisha Starr, was publisher of the *Sentinel*, and for a time worked on that paper. He served with distinction throughout the civil war, and on returning home engaged with his father in the job printing business, conducting one of the largest establishments of the kind in the Northwest. In 1868 Colonel Starr was appointed postmaster by President Johnson, and served until 1870. He leaves a widow, but no children.

Orrin I. Newton, proprietor of the Newton Paper Mills, Sparta, Wis., and of the pulp and paper mills at Tomahawk, same State, died at his home in Sparta on March 31 after an illness which had confined him to his house most of the time for the past year.

Henry Brandt, bookseller and stationer, Chicago, Ill., is dead.

Henry C. Gray, publisher, Malden, Mass., is dead.

H. P. Rolfe, manager of the *Leader* Publishing Company, Great Falls, Mon., is dead.

A. W. Anner, printer, Philadelphia, Pa., is dead.

THE "Hamilton" Felt.

"Best and Most Economical Made."

Among the Score

of Felts offered to the trade, the "Hamilton" stands without a peer. Thoroughly reliable, it is sold at the same prices as inferior makes. Lots of Felts, but only one "Hamilton."

In ordering mention kind of stock used, quality of paper made and speed of machine.

Shuler & Benninghofen, Hamilton, Ohio.

The W. S. Tyler Wire Works Co.,

CLEVELAND, OHIO.

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FOURDRINIER WIRES,

Cylinder Faces and Washer Wires.

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F. P. VAN DENBERGH, B.S., M.D., F.C.S. R. A. WITTHAUS, A.M., M.D. Consulting. ISAAC KEMOR, Ph.D

CHEMICAL ENGINEERS, ANALYSTS AND INDUSTRIAL CHEMISTS.

Analyses, processes and counsel in sulphite, pulp and paper manufacture. Ten years, Chemists to the City of Buffalo and Professors of Chemistry, University of Buffalo.

LABORATORY: Swan and Washington Streets, BUFFALO, N. Y.

THE GENERAL FIRE EXTINGUISHER COMPANY,

CONTROLLING THE INVENTIONS AND APPARATUS PERTAINING TO AUTOMATIC SPRINKLERS OF

Frederick Grinnell, William Neracher, John Hill, William Kane and others.

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Manufacturers of

Paper Mill Machinery.

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Iron or Wood Tubs, Laid or Steel Bars and Knives. Bed Plates and Jordan Fillings of every description a specialty. Correspondence solicited

HOLLINGSWORTH & WHITNEY CO.,

MANUFACTURERS OF ALL GRADES OF

Manilla Papers AND Pure Fibres.

PROPRIETORS OF

TACONNET PAPER MILLS, WINSLOW, ME.....Product. 40 tons Manilla Paper daily.
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COBBOSSEE MILLS, GARDINER, ME.....Product: 10 tons No. 1 Manilla daily.
PEQUOSSETTE MILLS, WATERTOWN, MASS.....Product: 12 tons No. 1 Manilla daily,
TACONNET PULP MILLS, WINSLOW, ME.....Product: 50 tons Wood Pulp daily.

Boston Office:
44 FEDERAL STREET.

New York Office:
207 BROADWAY.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
C. J. Scammon, Deering, Me.	$1,500
S. G. Illidge, Manchester, N. H.	1,458
Albert Phelps, Manchester, N. H.	81

MIDDLE STATES.

G. J. Volger, Buffalo, N. Y. (R.)	100

WESTERN STATES.

W. B. Montgomery, Warsaw, Ill.	125
Geo. A. Eslinger, Winchester, Ind. (Real)	1,405
E. F. Hamilton (Davis & Hamilton), Bloomfield, Ia. (B. S.)	200
L. E. Wallace, Oxford, Ia.	800
P. S. Everhart, Red Oak, Ia.	385
J. H. Padgett, Salina, Kan.	346
Benno Muehlen, Grand Rapids, Mich.	400
Muehlen, Muehling & Andresch, Grand Rapids, Mich. (R.)	243
B. W. Hubbs, Duluth, Minn. (B. S.)	368
Bailey & Harris, Hartford, Mon.	369
Watkins Brothers, Hastings, Neb.	1,375
H. C. Frantz, Springfield, Ohio.	200
Mrs. L. Funk, Tacoma, Wash. (B. S.)	500

SOUTHERN STATES.

A. J. Rummell, Kansas City, Mo. (B. S.)	2,150
D. W. Major, Mexico, Mo.	700

CANADA.

Kennedy & Porter, Kaslo, B. C. (B. S.)	80

LIENS DISCHARGED.

Geo. A. Eslinger, Winchester, Ind. (Real)	3,676
Geo. A. Eslinger, Winchester, Ind.	1,929
H. J. Rivers (Rivers Brothers), Salt Lake City, Utah (Real)	3,000

Failures.

A chattel mortgage on the stock of F. Ladd, publisher, Jerseyville, Ill., has been foreclosed.

The estate of J. C. Campbell & Co., dealers in wall paper, Hamilton, Ont., has declared a first and final dividend of 4¼ cents on the dollar. Liabilities, $8,000.

The trustees of the Bufford's Sons Lithographing Company, Boston, Mass., have paid a final dividend of 7 per cent. The settlement of the estate has been delayed by suits and the settlement of liabilities incurred by the trustees in carrying on the business of the company under the assignment.

On the application of the trustees of the corporation Charles H. Runk has been appointed receiver of Sabiston, Murray & Co., dealers in books and stationery, 916 Sixth avenue, New York. The liabilities are about $17,000 and the nominal assets $25,000. The company had a capital stock of $35,000.

Howard Gillespy has been appointed receiver of the Sheffield Manufacturing Company, Saugerties, N. Y., on petition of the trustees of the company. The assets of the corporation are said not to exceed $359,000, while the liabilities are approximately $1,155,000; the bonded debt on the machinery, fixtures, &c., is $446,000; there are certificates of indebtedness of $497,550, and the capital stock issue amounts to $200,000. The corporation has not paid dividends upon its capital stock, and at a meeting of the bondholders and stockholders a committee was appointed to examine into the affairs of the corporation. This committee approved of the dissolution.

Fires.

W. A. Brennan, publisher, Summerside, P. E. I., has been burned out.

Geo. Gregory, printer, Chicago, Ill., has been damaged by fire. Insurance, $1,000.

The Longshore Printing Company, Portland, Ore., has been burned out. Loss, $10,000.

D'Clerque & Schmetzer, publishers, Chicago, Ill., have been damaged by fire. Insurance, $30,000.

The Walsh Paper Company, Cuyahoga Falls, Ohio, has had an estimated loss by fire of $30 000; insurance, $10,500.

Accidents.

Paul Splitgarber, an employee in the mill of the Wolf River Paper and Fibre Company, Shawano, Wis., was killed on April 2 by the breaking of the barking machine.

John Snellbecker, an engineer at the mill of the York Haven Paper Company, York Haven, Pa., recently slipped and fell 25 feet to the ground, dislocating his hip, shattering several ribs and sustaining other injuries.

Will Casey, employed as a grinderman by the Umbagog Pulp Company, Livermore Falls, Me., was severely injured on April 4 by having the forefinger of his right hand caught between an iron bar and the edge of the grinder. The first joint was severed and the flesh was stripped from the second joint.

In Town.

Col. E. H. Haskell, W. H. Claflin and J. B. Forsyth, Boston, Mass.; W. O. Russell, Lawrence, Mass.; George T. Keyes, Pepperell, Mass.

Personals.

Henry Merz, of Heller & Merz Company, is one of the directors of the newly organized Standard Telephone Company.

The office staff and employees of the Smith & White Paper Company, South Hadley Falls, Mass., surprised Henry Toepfert recently by presenting him with a gold watch chain and gold sleeve buttons, the occasion being his eighteenth birthday. He was also given a gold watch by his father and mother. Refreshments were served, and the company departed at a late hour.

General Notes.

George McKibbin, Ward & Drummond, and R. H. Russell & Co., all of New York, were elected members of the Stationers' Board of Trade this week.

Bids for supplying paper and doing the printing and binding work of legislative publications will be opened at the office of James A. Roberts, State Comptroller, Albany, N. Y., on May 1.

At a meeting of the Typothetæ, held in its rooms at 106 and 108 Fulton street, on Tuesday, the following named officers were elected: President, Theodore L. De Vinne; vice-presidents, Douglas Taylor, Joseph J. Little; secretary, E. Parke Coby; recording secretary, W. W. Pasko; treasurer, Horace G. Polhemus; executive committee, Henry Bessey, J. W. Pratt, William Green; arbitration committee, John C. Rankin, Jr., L. G. Gilliss, Chauncey Holt, Willis McDonald, A. H. Kellogg; entertainment committee, Douglas Taylor, Theodore B. De Vinne, R. R. Ridge, Horace Holden, C. Bowyer Vaux; trustees, Joseph J. Little, J. W. Pratt, Henry Bessey, Peter De Baun, Harry E. Hallenbeck, and E. L. Kellogg.

Bids for furnishing the Post Office Department with registered package, tag, official and dead letter envelopes for the fiscal year beginning June 30 will be opened at the office of the Postmaster General, Washington, D. C., on May 9. At the same time and place bids for furnishing such envelopes as the several executive departments in Washington may require during the next fiscal year will be opened.

Rodney P. Woodman, of Boston, ordered of Osborn & Wilson a lot of paper which was to be made and which it was agreed was to be delivered on April 16, 1894. On the fifth of that month Mr. Woodman wrote to the sellers that he would not take the paper. Osborn & Wilson replied that the paper was made and would be shipped according to the agreement. It was so shipped, and after Mr. Woodman declined to pay for it, Osborn & Wilson, brought suit, which was decided in their favor last May, as reported in THE JOURNAL at the time. Mr. Woodman appealed to the Superior Court, and the decision of the lower court has been affirmed, the judgment being for the face of the bill with interest and costs. Mr. Woodman paid the judgment this week.

On the application of Mrs. Margaret E. Kingsland, treasurer of the company, J. H. Eastwood has been appointed receiver of the J. & R. Kingsland Paper Mills, Franklin, N. J. It is said that the concern owes about $45,000, including a realty mortgage of $15,000. The mill is of an estimated value of $100,000. The company has a capital stock of $60,000, and has been slow in its payments for some time. A considerable portion of the indebtedness is for money loaned, and the merchandise indebtedness in this market is limited. Among the creditors are Castle & Gottheil and R. Helwig. It is reported that fresh capital will be put in, and that the company will be reorganized. The mill has been in business for a great many years, being one of the oldest mills in the country now in operation.

Osborn & Wilson, whose business in paper and S. O. S. bags has been growing very rapidly, for some time have been looking for larger quarters. They have at last found them in the new double building at 54 and 56 Franklin street, the store and basement of which they now occupy. The store has a frontage of 50 feet, and a broad roadway runs alongside of it for its whole depth, giving ample facilities for trucks, &c. The west side of the store is devoted to offices for the members of the firm, bookkeepers, stenographers, &c., while the east side is given over to a portion of the flat stock. In the basement there is carried a full supply, aggregating many, many tons, of S. O. S. bags and such lots of paper as do not find a temporary resting place in the store. There are two elevators, one in the front to the sidewalk, and the other inside of the store, and having connection with the truckway at the side. The firm is now comfortably housed, and has at its command ample facilities to allow it to care for its customers more promptly and carefully than ever.

Duval & Co., 52 West street, New York, have put on the market a patented device known as Duval's Patent Roll Paper Protector, which, as its name indicates, is intended for the protection of the ends of roll paper. As is well known, there is a large waste caused by damage to the ends of roll paper, and in some cases, where rolls are being unloaded and strike just right the concussion causes the roll to burst. The protector is a cold rolled steel ring, made so as to be adjustable, and fits snugly over the end of the roll, and is fastened in place by twenty gauge wire, which passes over cleats. The protector is now in practical use on a large number of news rolls and has proved itself to be a money maker, as it reduces the percentage of waste very materially. By the use of the protector larger and heavier rolls can also be shipped, and in fact it has demonstrated its practical usefulness so thoroughly that it will undoubtedly come into very general use. With large rolls one end only needs to be protected, and as the protector itself is very low priced it has an array of advantages which commends it to makers of roll paper everywhere.

Trading Companies and the Courts.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

To incorporate or not, that's the question;
Whether 'tis better for a merchant to give
Himself as basis of a bus'ness credit,
Or to assume incorporate existence;
And then should failure come himself be solvent,
While bus'ness creditors should find only a name,
High sounding, but empty as a bag of wind.

There are few lawyers who have not been consulted by their mercantile friends as to the advantages or disadvantages to be found in conducting their business under the form of a corporation; and it is to some of these matters, as shown by the statutes and decisions of the highest courts of the various States, that we would call attention, giving only those of general interest and universal application.

Private corporations, created and organized for transaction of business and derivation of pecuniary profits, are in this country mainly the growth of the last seventy-five years. It was said by an eminent jurist in 1828 that no instance of such a corporation could be found in Colonial times. We are now told on good authority that there are about 25,000 incorporations a year in the United States alone.

In the United States, at the present day, almost all private corporations, whether business or otherwise, are formed under general laws, and in many States the legislatures are expressly forbidden from granting special charters. Under these general laws persons complying with a few formal requisites can organize themselves into a company for almost any business purpose. Excepting in the features that they can sue and be sued, make contracts, acquire rights and incur liabilities in and by the corporate name, and that a change of membership does not work a dissolution, such companies differ very little in their essential attributes from a copartnership.

Operations are under the control of the Legislature, but where such body is restricted by constitutional provisions, and the formation is limited by a general law, the charter is issued by the Secretary of State, upon compliance with the terms of the statutes. Forms of application can be had of that officer, and with a copy of the law before him anyone of ordinary business intelligence can fill in the blanks in accordance with the facts and the requirements of the laws. Failure to substantially carry out such requirements may render the parties attempting to organize liable for the debts of the company, and while bearing its burdens lose the advantages sought. Compliance creates the right by limiting the liability, and making public, by record, &c., their agreement as to object, amount of stock and ownership of same.

When a corporation is formed with a stated capital, the different subscribers agree to contribute specified amounts to this fund, and if some of them carry out this agreement, though others do not, the sum paid, together with the agreements to pay, constitute the entire fund to which a creditor may look. He may look to the treasury of the company for the amounts paid, and to the personal liability of those who have not paid for the balance. Where the latter are irresponsible their debt cannot be put on the solvent subscribers, who have already done all that they agreed. Every stock certificate should contain the clause "Fully paid and non-assessable." Then there would be no liability, if such were the fact.

The laws of some States permit payments of the capital stock in property in lieu of money, while others are silent, implying that it should be money or its actual equivalent. The Supreme Court of the United States has said where the charter authorizes the capital stock to be paid in money, and the stockholders honestly and in good faith put in property at a fair cash value instead of money in payment of their subscriptions third parties have no ground of complaint. It is very different, however, where they are to pay in cash, and where but part of the amount has been paid. Where the stock is fully paid, whether in property or cash, there must be actual fraud in the payment to enable creditors of the corporation to call the stockholders to account.

The preliminaries having been completed and certified to the Secretary of State, that officer, if everything is regular on the face of the certificate, issues the charter, which should generally be filed with the recorder of the county where the principal office of the company is located, and the corporation is not completed until this has been doner This record being open for inspection enables the public to discover who are liable for the acts of the company; and whenever any changes are made in the organic character of the company, such as change of name, increase or decrease of the capital stock, &c., all must be done in a manner similar to the procedure in starting its existence, so the public may be advised as to its powers and liabilities.

The affairs of corporations are controlled and managed by a board of directors, elected at the annual meeting of the stockholders, and hold during the period limited by statute and the by-laws of the company. The directors elect all of the other officers of the corporation, generally a president, vice-president, secretary and treasurer, who perform the usual duties appertaining to such officers.

(To be concluded.)

Foundation Repairs.

In blasting out a wheel bed located in trap rock the engineer to his great surprise came upon a small bed or pocket of quicksand. It was necessary to blast one corner of the flume upon this bed of quicksand, and several barrels of cement were worked down into the bed of sand and allowed to harden; the superstructure was then placed upon the concrete bed formed by the cement and sand.

Before the mill had been running many months trouble was caused by the settling of that part of the flume which extended from the quicksand. Investigation showed that the bed of concrete had settled bodily.

To prevent further trouble a hole was drilled in the concrete and a small charge of powder was exploded therein. Just enough of the explosive was used to shatter the cement, so that a 6 inch pipe could be forced down into the sand. As the pipe was pressed down by means of jackscrews a stream of water was forced into the upper end of the pipe. In escaping from the lower end the water carried with it the sand, thus forcing a passage for the pipe.

It was expected that rock bottom would be reached in at least 3 or 4 feet, but to the surprise of the engineer, 20 feet of pipe were forced down and no bottom secured. When this depth was reached a barrel of cement was mixed up very thin with water, and forced into the pipe.

Enough water was then pumped in to drive the cement out of the pipe into the surrounding sand. It was then allowed to remain for three or four days without being disturbed, when it was found to have hardened sufficiently to resist any pressure which could be put upon the pipe by any jackscrew at hand. The flume was blocked up upon the 6 inch pipe thus sunk into the sand, and has not since settled in the least.

Superheated Steam.

The New York *Engineer* says, in regard to increasing the pressure of steam by superheating it, we have always taken the ground that it was not possible to do so if the steam superheated was dry in the first instance. In the subjoined paragraph there is proof of this statement in the description of a device for testing the saturation of steam. This is Gehre's apparatus:

"A sample of steam, after passing through a pipe, is shut in between two valves. Below there is a means of heating the pipe by a flame. As long as the steam remains saturated, the pressure and temperature will be according to the steam tables. When the steam is heated from below, an evaporation of all water in the steam takes place, the pressure rises, and the steam commences to be superheated.

"The volume is constant during the operation. The valves are closed and sample of steam obtained, and the pressure of steam read off by the gauge. The lamp is then placed under the pipe, and as soon as the temperature begins to rise the steam pressure is again noted. From the weights of these equal volumes at the two unequal pressures, the percentage of moisture in the steam can be calculated. If no moisture is present, the pressure will not rise after flames are applied."

Idler pulleys work most satisfactorily when located on the slack side of the belt about one-quarter way from the driving pulley.

Building Cement.

A recently patented composition for building uses is made according to the following formula:

Coal tar, 50 gallons; pitch, 20 pounds; alum, 5 pounds; rock salt, 6 pounds; oxide of iron, 10 pounds; sal soda, 5 pounds; bicarbonate of soda, 5 pounds; chloride of lime, 5 pounds; asphaltum varnish, 3 gallons.

To prepare the mixture, take 5 gallons of the coal tar, mingle with it the other ingredients specified, with the exception of the asphaltum varnish, and cook the mass for two and a half hours, when it is added to the remaining 45 gallons of coal tar, the whole being boiled and well stirred, and finally the asphaltum varnish is added and well stirred in.

The compound is used as a roofing paint, and is said to form a cement which is well adapted for application to wood, paper or metal roofs and to other structures to protect them from the weather.

The mixture is applied hot and may be applied by means of a brush. It renders the material to which it is applied waterproof and almost fireproof.

Electrolytic Apparatus.

Dr. Carl Kellner has introduced several modifications relating to diaphragms specially designed for use in apparatus for the electrolytical decomposition of alkaline salts. A diaphragm is characterized by having a feeble affinity for the hydroxide of the alkali, formed in the course of the electrolytical process in which it is used, and consequently of retaining the alkali only in feeble chemical combination, so that the diffusion of the hydroxide into the space containing the anode or anodes is rendered difficult.

These requirements are met by soaps, owing to the property which they possess of being insoluble in concentrated solutions of alkaline salts, especially of chlorides of alkalies, while at the same time being capable of retaining a small quantity of free alkali.

It will be most advantageous in the construction of diaphragms to use soaps which contain the same alkali as the salt which is to be decomposed; for example, when decomposing chloride of sodium to use soda soaps, and for chloride of potassium potash soaps.

Diaphragms, according to Dr. Kellner's modification, can be constructed in various ways. Thus the soap molded in the form of a plate can be used directly as a diaphragm, or it can be provided for the purpose of increasing its firmness with a rigid internal skeleton or support of suitable material, or a stratum or sheet of soap may be fixed between porous or perforated plates or sheets of suitable material according to the consistence of the soap employed, the material employed in each case for supporting the soap being such as will not be materially affected by the products of decomposition formed in the course of the electrolytic decomposition.—*Paper Trade Review, London.*

Rope Drives.

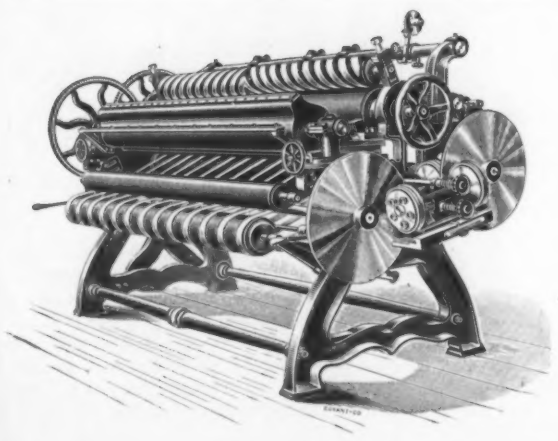
For rope drives, the common rule is not to make the diameter of the smallest pulley less than thirty times the diameter of the rope, and even larger than this is to be preferred. For wire rope it should be still more, and from fifty to 100 times the rope diameter is the common practice when these are used. Excepting for very long transmissions, the wire is seldom used in regular driving, as its weight is objectionable, and its advantages are not enough to make it popular over manilla or cotton ropes.

Keeping a Record.

In some steam plants a careful record is kept of the coal burned and the water evaporated by the boilers, and we believe it pays every time to keep such a record. Here is a case where it did pay. At a plant lately visited, says a correspondent of the Boston *Journal of Commerce*, the evaporation had been observed at regular intervals from the readings of a water meter and divided by the coal burned.

It was observed that the efficiency of the boilers was decreasing, and that the decrease was a considerable one. Investigating the matter the chief engineer discovered that the side doors at the side of the setting had sprung considerably and air was leaking into the boiler setting at a rapid rate. This was repaired, and the old-time efficiency of the boiler immediately showed itself. This case shows the importance of keeping the record, for without it the decreased efficiency would never have been noted, and if observed would have been charged to a heavier load or some other cause.

As belts increase in width they should also be made thicker.



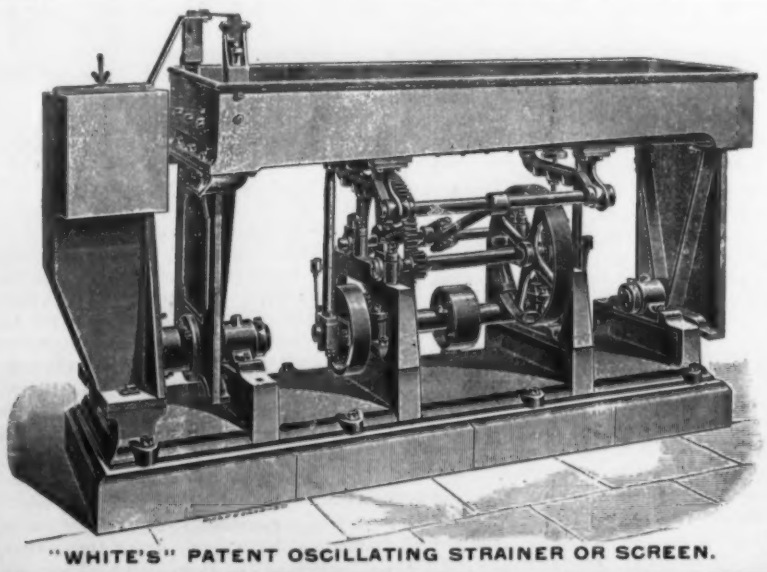
THE "HORNE" FRICTION CUTTER

IS IN ADVANCE OF ANY CUTTER IN USE TO-DAY.

WE HAVE EIGHT RUNNING IN ONE FINISHING ROOM.

AFTER USING ONE SEVEN MONTHS **A CUSTOMER SAYS:** *"You have the Perfect Cutter. We are sure it will save its cost in one year in the saving of waste paper alone."*

THE J. H. HORNE & SONS CO., LAWRENCE, MASS., U. S. A.,
MANUFACTURERS OF PAPER MILL MACHINERY.



"WHITE'S" PATENT OSCILLATING STRAINER OR SCREEN.

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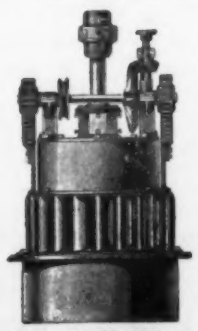
PAPER MILL MACHINERY.



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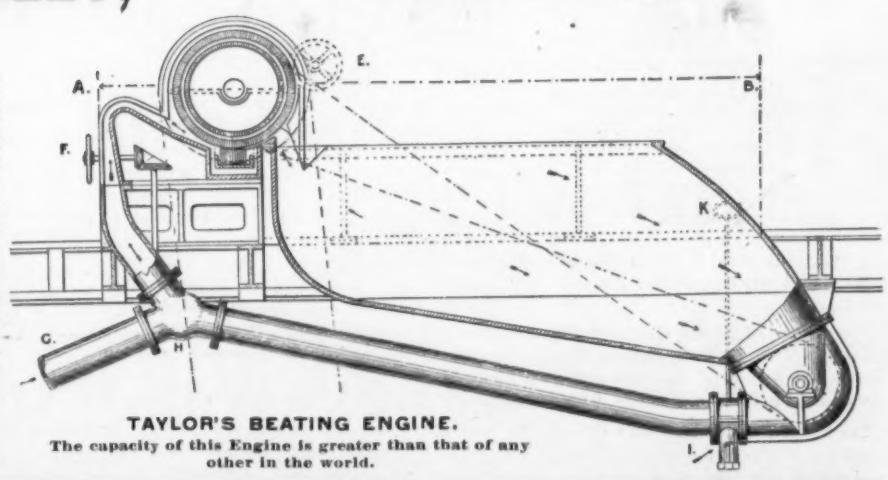

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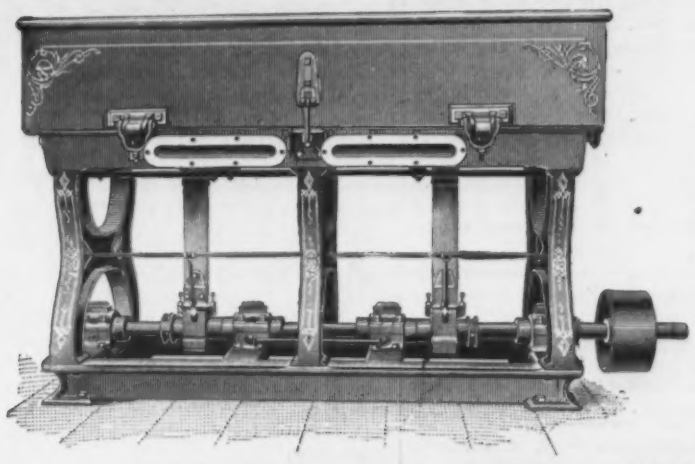

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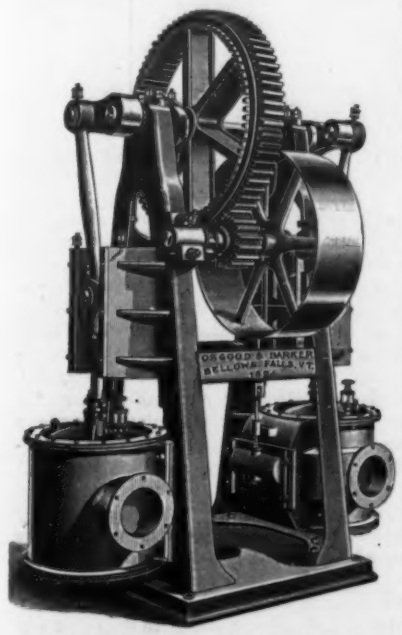

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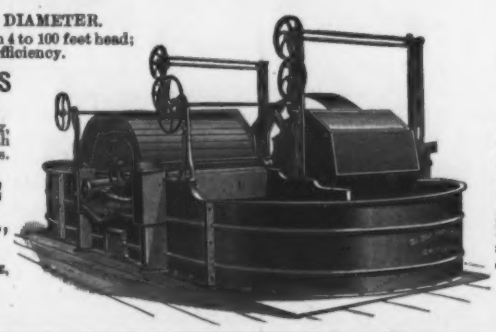

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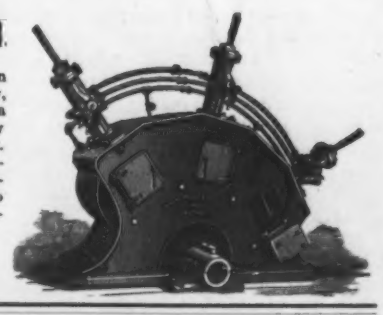

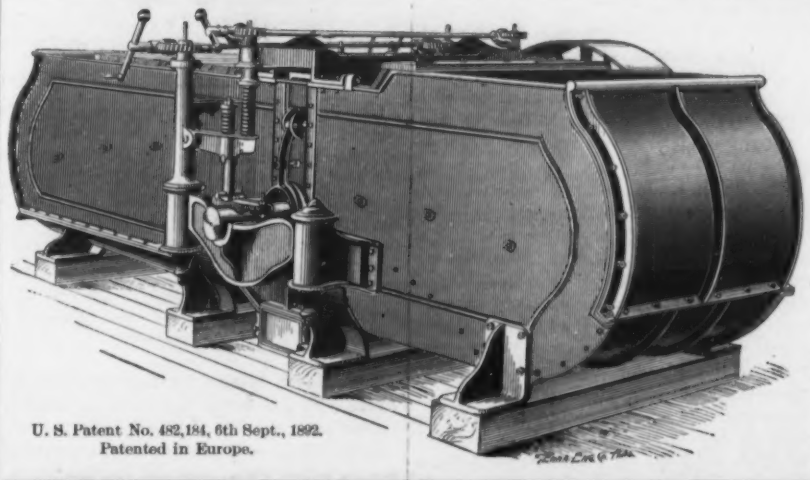

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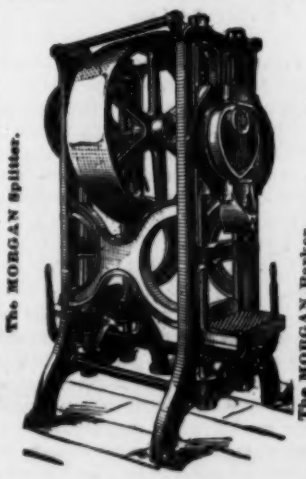

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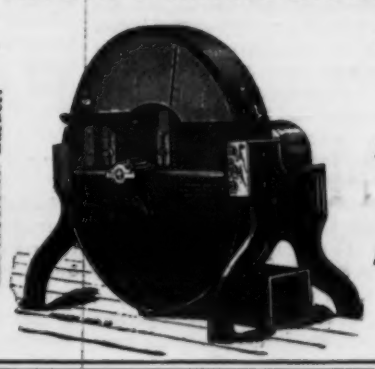

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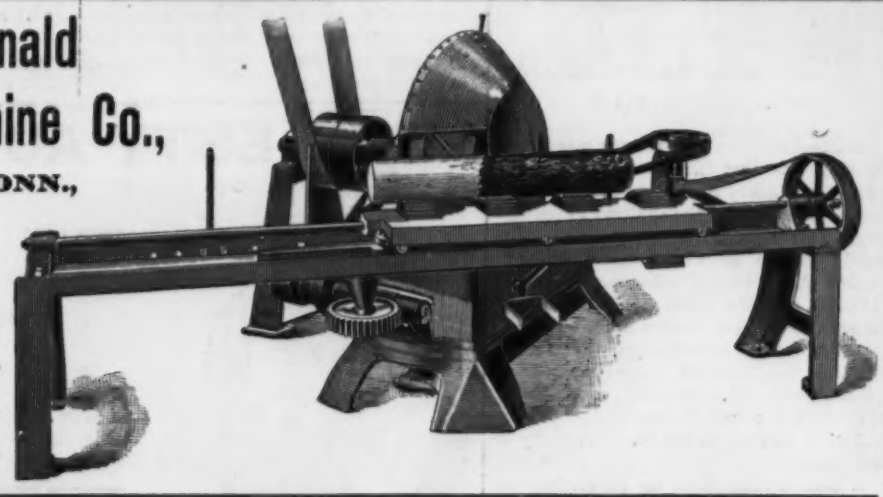

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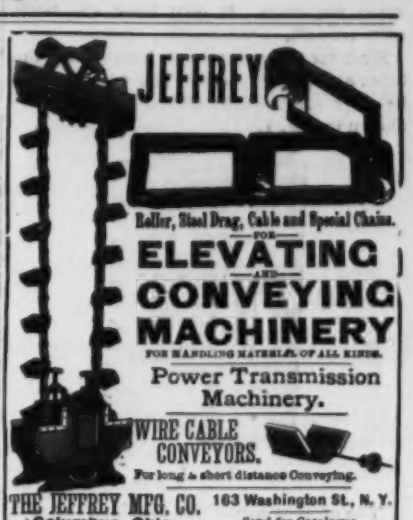

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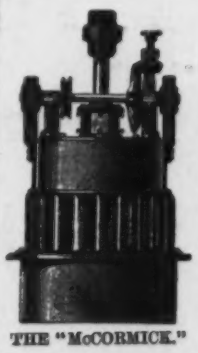

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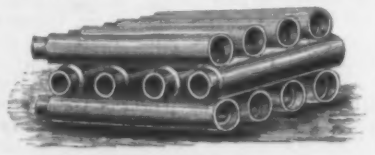

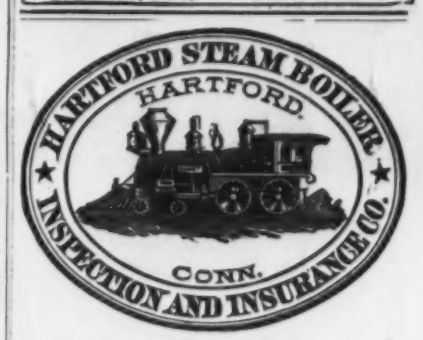

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Belting in the Mill.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By M. W. Danielson.

It is often said that mill proprietors build first-class plants and equip them with the best and most expensive modern machinery, fit them out with electric lights and improved heating and drying apparatus, then when it comes to belting, the same men have looked about until they have been able to secure an outfit of belting at the lowest possible figure. The result is that the belting of some of our best mills is not up to the standard.

It is quite easy to get at a discount of 10, 20 or 30 per cent. below first figures, and the belting may appear to be all right, but when put to practical use the mill owner soon finds that it would have been better for him to have been a little more liberal in placing the contract for the belting of his excellent mill.

It is my opinion that belts should be made heavier even if more costly, and run a trifle slower than theory and accepted rules would indicate, not only for the sake of reducing the belt bill in a long run, but even more to avoid the frequent interruptions to manufacture from breaking belts. In other words, we should look a little more closely to the most economical use of the belt, instead of wondering how much it can be made to carry.

The total life of belting, cost of maintenance and repairs and the interruptions to manufacture caused by belts, are dependent upon the total load to which the belts are subjected more than upon any other condition. The other circumstances affecting the durability of belting are the manner in which it is spliced; whether it is kept clean and free from machine oil; whether kept pliable instead of being allowed to grow hard, and the speed at which it is run.

The speed with which a belt is run has little effect on its life until it passes 3,000 feet per minute, and the best speed for maximum economy should be from 4,000 to 5,000 feet per minute.

Belts, however, whether they be composed of first-class material or of inferior, are liable to breakage and wear. Hence the man who can best manage the belting is the most desired by the proprietor. There are many ways for splicing belts. A piece of belting is sometimes riveted over the butts. The rivets are likely to work loose and make trouble. The ends often get out of shape and make the whole thing flabby, and the edges of the splice may catch the shipper prongs.

A laced belt would be well enough if laced right. As it is, the butts' ends will work loose and wear off by contact with the shipper, and the fixers will have to lace the union too often. If well laced the butts will last well.

First cut the butts even, then punch the holes at regular spaces. The crosses must be even and the laps laid methodically, as shown in Fig. 1.

Fig. 1.

The crosses should be regularly formed, as shown in Fig. 2.

Fig. 2.

In this method the ends of the belt meet squarely and the union is a substantial one. The uneven placing of the ends of the belt and the irregular lacing of the same may permit the butts' ends to flap and catch on the iron work of the shipper, and trouble results all around. Power is lost with such a belt and the speed will be uneven, as the belt is likely to slip a little on the pulley when the loosely made union comes around.

Belts are caused to run unevenly on straight pulleys by bad lacing. A belt well laced, with even butts, will run better and longer than one shiftlessly put together.

Some very interesting facts in regard to the stretch of belts were noted in some recent experiments. For instance, the total stretch of leather belting exceeds 6 per cent. of the original length, and that of double leather belts was 36 per cent. of the total stretch during the first six months of the run, which was under the ordinary rule of giving an effective pull of 65 pounds per inch of width and a total load of 111 pounds. Under the more economical load of 54 pounds per inch, it was found that the stretch during the first six months was 15 per cent. of the total.

The cost of all labor and materials used in the maintenance and repairs of double belts added to the cost of renewals, as they give out through a term of years, will amount on an average per year to 37 per cent. of the original cost of the belts, if they are properly cared for, and work under a total load of 111 pounds effective pull.

Now if the belts are worked under a load of 54 pounds per inch and an effective pull of 26 pounds per inch width, the annual cost of repairs amounts to under 14 per cent. of the original cost, which shows conclusively that it is economy to run a belt moderately instead of up to its full capacity, and when one attempts to overload a belt then the cost for maintenance and repairs increases too rapidly for computation.

This cost problem is further shown by the fact that the expense for maintenance and repairs on double leather belts through the total life of the belt (about 6.7 years, running twenty-four hours per day) amounts to one and one-half times its original cost when working under the ordinary rules of 111 pounds load and 65 pounds effective pull; but take the same belt running under 54 pounds load and 26 pounds effective pull, the life is not only increased to 8.8 years, but the expense for repairs will amount to only 30.4 per cent. of its first cost, instead of one and one-half times it.

WEAR OF BEARINGS.

Box bearings and journals, if not abused, will remain in good condition for a number of years. Machinery, no matter how good it is, is bound to wear, and sooner or later the effects of wear are evident. The simple wearing of a shaft at the bearing, the wearing of a box journal through years of friction, does not condemn the machine to which the same belong.

A little skill on the part of the machinist will overcome the effects of wear through use. By keeping the caps tight, the bearings even and well oiled there will be less danger of wear.

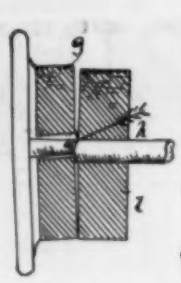

Fig. 3.

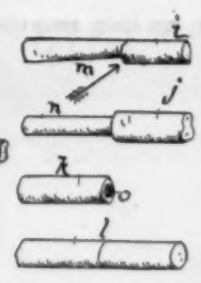

Fig. 4.

Machine builders will usually attempt to convince one that excessive wear of journals in machinery is caused by carelessness of hands, who allow the shafting to become dry. This is true in many cases. The hands fail to oil the parts difficult to reach. Also dirt and waste accumulate in oil holes, and the hands apply oil into the crevice, thinking it reaches the shafting.

A dry journal usually squeaks and gives warning, but often the metal is worn off to some extent first. Of course the remedy consists in hunting up these stopped up oil holes and pouring in the oil. But many do not do this.

A neat arrangement for preventing the oil holes from stopping up with dirt and waste is a cap on the box, the oil hole of which has been enlarged to admit a tube. This tube is metal. At the top is a hinged flat piece which fills the top of the tube and is held up by a spring so that no foreign matter can enter. In oiling the attendant pushes the end of the oiler into the tube, forcing down the hinged piece, and pours in the oil. As soon as the nose of the oil can is withdrawn, the hinged parts snap up and close the opening.

In Fig. 3 is a view of a pulley, G, on a worn shaft, H. The belt will work badly from the tight pulley F to the loose one. The shaft is worn like M in the part I. To remedy, take off the shaft, turn it down like N in J, and put on a shoulder like K. The opening O in this goes 'way through. When complete the shaft will be like L in Fig. 4

Arrangement of Machinery.

Three general methods of arranging machinery of power stations are common in the United States. In one the power is transmitted from the prime mover to a line shaft, and thence by belting to the dynamos. This we will call the line shaft system. In another the power is transmitted by a belt or rope from the prime mover directly to the dynamo. This we will term the direct belting system. In the third the shaft of the dynamo or generator is directly connected to the prime mover, and has the same speed of rotation. This we call the direct connected system. Regarding these several systems, it may be said that local conditions or surroundings may be such as to render it advisable to adopt one or the other. The writer, however, believes that it will be seldom or never necessary under present conditions of manufacture to adopt or use the line shaft system. That system is objectionable for various reasons.

The direct belted system is to-day the cheapest in first cost and in many respects the most satisfactory to operate. The arrangement of the generators, distinct from the prime movers and connected by flexible connections, makes it possible to repair accidents with great facility and convenience. In general with this system only one or at most two generators can be driven from an engine without the use of riding belts. With the condition of the market as at present, however, with generators available of any size required, this matter is of little practical importance.

The direct connected system is without doubt the ideal system, since transmission losses are eliminated and the power occupies a minimum amount of space. The cost to-day would be about 20 per cent. in excess of the direct belted, but not essentially greater, and possibly even less, than that of a well constructed line shaft system. The American practice in building direct connected machines is to extend the main shaft of the engine and suspend the generator armature on the end, either with or without an out-board bearing. The English system is somewhat less rigid, the engine shaft being connected to the dynamo shaft with a coupling.—*Prof. R. C. Carpenter, in Cassier's Magazine for April.*

Kerosene oil has no effect upon live iron, it only affects oxide of iron (rust) by lifting the oxide from the live iron. If boilers are made tight by the formation of oxide in joints, or if boilers are made tight from the formation of scale in joints, or around holes, then kerosene oil will make them leak by removing the scale and removing the oxide. If the iron of boilers is already weakened by rust and corrosion, and kerosene oil is used, it will remove this rust and corrosion, bringing it down to the solid live iron, thus far and no farther. There is nothing in kerosene oil, in any manner, to affect live iron. There are over 1,000 manufacturers to-day feeding kerosene oil into their boilers by the drop, many of them having had it in use for several years. If there was anything deleterious in its use engineers, boiler inspectors and boiler insurance companies would have discovered it long ere this. The inspectors for some of the largest boiler insurance companies in the country are among the strongest advocates of the use of kerosene oil for the prevention of scale.

Legal Decisions.

[SPECIALLY REPORTED FOR THE PAPER TRADE JOURNAL.]

Preference of Creditors by Insolvent.—While it is permissable for an insolvent debtor to prefer one or more creditors to the exclusion of others, such preference must be an honest one, and not a device to enable the debtor to fraudulently delay or defeat other creditors.—*Landauer v. Mack (Sup. Ct. Neb.), 61 N. W. Rep. 597 (46).*

Evidence of Habitual Care or Prudence. Not Admissible.—On the question whether, in the particular instance, an employee who has been injured in the use of dangerous machinery, evidence of his character for prudence or recklessness in the conduct of such business is inadmissible, either against him or for him.—*Atlanta & W. P. R. Co. v. Smith (Sup. Ct. Ga.), 20 S. E. Rep. 763 (54).*

Liability of Partners.—In an action against co-partners, the admissions of one partner as to the scope of the partnership business, not made at the time the contract sued upon was executed, are not admissable against the other partner. A partner who executes in the firm name a contract not within the scope of the partnership business is bound thereby, although the firm is not liable thereon.—*Taft v. Church (Sup. Jud. Ct. Mass.), 39 N. E. Rep., 283 (68).*

Liability of Master for Defective Appliances.—Evidence that a master, instead of supervising the erection of machinery in another State, sent another person there to attend to the work, who had full charge of same, tends to show that such person was his master's vice-principal, and makes the master liable for his neglect as to defective appliances.—*Whaley v. Hartlett (Sup. Ct. S. C.), 28 S. E. Rep. 745 (59).*

When Fraudulent Preference Operates as a General Assignment.—Where a debtor, while in a condition of hopeless insolvency, brought on by a course of systematic fraud, practiced with the intention of failing in business, assigns to a creditor a claim on a solvent customer, the transaction operates as an assignment of all of the debtor's property for the benefit of all of the creditors.—*Quebacker v. H. B. Claflin Co. (Ct. App. Ky.), 28 S. W. Rep. 506 (63).*

Liability of Principal to Agent.—Where a party requests his agent to purchase for him a certain machine, without stating the price to be paid for it, the latter is authorized to pay the market price and recover the amount from his principal, even though the machine does not prove to be what the principal expected.—*Clifton v. Ross (Sup. Ct. Ark.), 28 S. W. Rep. 1,085 (59).*

Belts should be cleaned and greased every five or six months.

Fuel and Steam.*

By Richard Birkholz, M. E.

Fuel is a name for any material the burning of which generates heat for domestic or industrial purposes. It must ignite at a moderate preliminary heat; burn with comparative rapidity, and be obtainable in sufficient quantity and at moderate price. It may be classed as solid, liquid and gaseous fuel.

The chemical composition of ordinary solid fuels, leaving out moisture, silicates, sulphur, &c., is about as follows:

Fuel.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.
Wood	50	6	43	1
Peat	51	6	42½	½
Lignite	70	5	24½	½
Bituminous Coal	82	5	12	1
Anthracite Coal	93	2½	2½	0

Fuel.	Theoretical heat in B. T. U.	Useful heat in B. T. U.
Wood	5,000—6,000	3,500—4,000
Peat	4,500—5,000	3,000—3,500
Lignite	3,000—5,000	2,300—3,800
Bituminous Coal	10,000—12,000	7,500—8,500
Anthracite Coal	13,000—14,000	9,000—10,000

Liquid fuels are hydrocarbons, and gaseous fuels mixtures of hydrocarbons, carbonic acid and free hydrogen.

The products of complete combustion are carbonic acid and water. The theoretical amount of heat of the fuel—its calorific power—is ascertained by burning completely a certain weight of same in Thompson's or Berthier's calorimeter. The values found are enumerated in the above table under the heading "Theoretical Heat." These are always considerably above the ones obtained by actual combustion under a steam boiler, as in the latter case numerous sources of loss, such as imperfect combustion of gases, unburnt coal in the cinders, excessive air admixture, losses by radiation and waste gases come into play which cannot be allowed for in theoretical experiments. It is usual therefore to determine the value of a fuel by the combustion of a weighed quantity in the furnace of a standard boiler and measuring the amount of water evaporated by the heat developed.

The values of available heat are enumerated also in the table under the heading "Useful Heat." It is seen that the latter values fall considerably short of the theoretical, being about 70 per cent. thereof.

By the calorific value of a fuel the quantity, and by the calorific intensity the quality, of the heat is understood. The faster the fuel is consumed, the greater the heat. It is very difficult to find the calorific intensity of a fuel, as dissociation of the gaseous compounds hinders the experiment very much. According to Professor Bunsen and others who have specially considered this subject, a temperature of 5,500° F. will be the maximum attainable from any fuel under ordinary process of

* Paper read before the Southern Ice Exchange.

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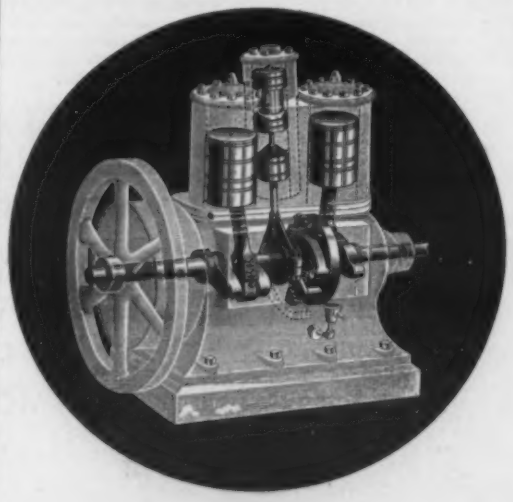

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combustion, viz., by common air. The calorific value is required for metallurgical processes, and as our preface is written for engineers, we need not dwell upon that.

We do not aim at the concentration of heat, but the spreading of it over the large extent of heating surface of a steam boiler. When the fuel burns, its carbon unites with oxygen, first producing carbonic oxide gas and correlatively some heat. Next the oxide unites with more oxygen, becoming carbonic acid gas, thereby producing a great deal more heat—nearly four times as much. Often the heat generated instantaneously dissociates the carbonic acid into the oxide and oxygen, thus cooling the gases enough so that they can reunite. The combustion will in this case be a "burning at intervals," manifesting itself by a series of explosions: Straw, shavings, wood or soft coal issuing much gas will act this way when burning rapidly.

A pound of coal requires, theoretically, about 12 pounds of air to burn completely; but practically about twice the amount is required in the boiler furnace to elongate the flame and dilute the heated gases, spreading the heat over as much boiler surface as possible. By admitting insufficient air we lose much heat, as the gases will consist mostly of the invisible carbonic oxide. This is the case when the fires are banked; the coal is slowly consumed, giving off but little heat. The loss of heat caused by the invisible carbon oxide is far greater than that of the densest smoke.

Anthracite coal requires a good draft. The gases are consumed near the fire, and the waste gases carry the heat to the boiler on their way to the stack. The boiler ought to have sufficient heating surface, or the hot waste gases ought to travel a sufficient distance to be cooled down to about 350° F., which temperature is found high enough to produce a good draft in a stack of at least 100 feet in height. As the anthracite gases carry hardly any matter which can condense on the heating surface of the boiler, the flues or tubes remain free from tar coating, and as the waste gases in a finished state enter the tubes of a tubular boiler, these may be of very small diameter and the metal quite thin to withstand the collapsing pressure and let through the heat most readily. As anthracite shows a higher caloric value than bituminous coal, one would suppose that less of it would always be required for a certain evaporation than of bituminous coal. But in many instances such is not the case, owing to poor firing or mistakes in the construction of the boiler or furnace. There is practically no smoke from anthracite, but the invisible carbon oxide may issue wastefully. The price of anthracite is against its use in the South for industrial purposes; but it is used for domestic purposes and may be well worth the extra high price on account of the absence of soot, smell and smoke.

Our bituminous or soft coals vary considerably in contents of volatile matter and carbon. As it is assumed that the anthracite is made from bituminous coal by nature, which has by some effort deprived it of some hydrogen and oxygen, it is evident that some soft coal is nearly anthracite, thus containing but little hydrogen and oxygen and much carbon; while other soft coal, not having been acted upon with equal intensity by nature in the peculiar manner spoken of, will contain more volatile matter. Professor Daubree has shown that wood may be converted into anthracite coal by exposure to the action of superheated water at a temperature of 750° Fahr.

The following tables show the chemical combination of some kinds of soft coal, without regard to moisture and the components of ash:

Kind of Coal.	Carbon.	Volatile Matter.	Ash.
Alabama, Pratt	63.51	30.69	5.80
Alabama, Blockton	57.58	38.86	3.56
Kentucky, Jellico	62.06	36.30	1.64
Penna., Youghiogany	58.49	38.81	2.70
Penna., Slack (Hard Bituminous)	79.01	13.93	14.06
Illinois, La Salle	52.73	35.39	11.88

Kind of Coal.	Solid Refuse, Per Cent.	Useful Effort, - B. T. U.	Water Evaporated from and at 212°.
Alabama, Pratt	11	8,300	8.59
Alabama, Blockton	9	8,200	8.48
Kentucky, Jellico	5	8,600	8.90
Penna., Youghiogany	7	8,500	8.80
Penna., Slack (Hard Bituminous)	14.5	7,500	7.76
Illinois, La Salle	14.	7,200	7.46

Soft coal, in burning, exudes much gas, which has to be burned and cooled off while passing under and through the boiler. A lively, sputtering fire must be kept for economy's sake, so as to burn as much of the gas as possible before the fire bridge and superheat the non-burned gas for its way under the boiler. The heating surface of the boiler is cooling surface for the gases; and when the non-consumed gases are cooled below a certain temperature their flame will extinguish and they will burn no more. The gases ought to be burned at the time they enter the flues at the back end of the boiler, and the flues must present sufficient cooling surface to cool the waste gases after they are completely burned. Should the flaming, non-consumed gases strike into the tubes, they are cooled too much, and much carbon oxide and smoke will pass off, and unburned tar and soot will condense and deposit within the tubes. The softer the coal, *i. e.*, the more volatile matter it contains, the larger the tubes must be, so as not to cool the gases too much in their burning state, or the boiler must be chosen of greater length and smaller diameter. For this reason it is wrong to select fire box boilers of the locomotive, Galloway or marine type, with internal furnaces in which the gases can hardly be made hot enough for the purpose, as too much cooling surface surrounds the glowing coals. Those types are all right for anthracite and dry soft coal, but not for the long flaming soft coal.

The value of the coal delivered at the boiler is a very important question. The freight for poor coal is as high as that for good coal; often more, as more weight of the poor coal is required to produce the same evaporation than of the good coal. Wherever the power plant be located, one kind of coal is the most profitable for the purpose; and it is not so much the chemist who can find out the kind as it is the skillful engineer. Often the owners of the plant furnish the cheapest available coal they wish used, and it is the engineer who has to try to get the best results from it by selecting the best grates for the purpose, experimenting to find the best area of grate surface to suit the coal and the heating surface of the boiler; or, in other words, the cooling surface for the gases, the height of space between the fire bridge and boiler, &c. He can ascertain by repeated tests the weight of water which can be evaporated per pound of coal, the weight of ash, the cost of the evaporation; and he should then confer with the owners about using dearer or better coal, making tests with the same with equal conscientiousness, and then decide which coal should be purchased. Maybe the dearer coal is the cheapest.

The worst feature of coal is the admixture of silicates. Such coal clinkers badly; the silicates melt to a glass flux and encapsulate good coke, hindering its consumption; the clinkers also agglomerate to large cakes, which must be broken frequently to allow the current of air to blow through, which cools the grates and keeps them from melting. Coal may analyze chemically exceedingly well in carbon and volatile matter, but a small percentage of silicates will render it unprofitable. The analysis of a coal may state 2 per cent. of ash, and in burning the amount of solid refuse may be 8 to 10 per cent. by reason of clinkering.

The stating of the analysis of coal is not so important as stating its useful heat. The profit which the fireman seeks by obtaining a good heat from a thin layer of coal is lessened as the tendency of the coal to clinker increases. He must use his best judgment. In the above table the useful heat is rated lower than is found by some experiments with certain boilers and furnaces. The useful heat may show higher when careful, scientific firing is carried on for a short while, but the above rated useful heat and evaporation is a fair average of good all-around firing.

In general, the coal ought to be small, not over 2 inch cubes. It will make a greater heat in the given time, and the unburned gas will leave the fire bridge in a hotter condition, for obvious reasons. Furthermore the fire bridge ought to compress long flaming more than short flaming gas to cause a certain retention and consequent superheating of the same.

I said before that about 24 pounds of air, 300 cubic feet, are required for the economical combustion of 1 pound of coal under a steam boiler. More air will cause loss. Such surplus air is a "bloated non-producer," who warms himself by stealing its heat. The bed of burning coal must be of uniform thickness, such as is found by experimenting to be the best according to the draft, but never thicker than 9 inches. The surface must be raked level, and when holes are burned to let the "non-producer" in in great quantities, they must be stopped up immediately. The fire fronts ought to have quick opening doors. The Butman, Chicago, type may be recommended, and the fireman should throw in coal often and all over the coal bed, quickly opening and shutting the doors. When cleaning fire the damper must be shut, of course. The masonry of the boiler setting must be tight, and be kept so.

The cleaning doors in the masonry near the back end of the boilers must be tight, for the inrushing cold air will cool the gases, reduce their ignition, and cool the boiler while passing through its tubes. It will also reduce the draft naturally. The setting walls ought to be made hollow, as confined air is a very good non-conductor of heat. Cracks in solid setting walls are bad, but cracks in hollow setting walls are worse, as they allow the air to move by the thin parts of the walls next to the fire, thus carrying away much heat. The tops of the tubular boilers are often covered with brick directly, which is bad practice, as brick is a good conductor of heat, and the boiler cannot well be got at for inspection. I always lay cast T bars across the boiler about 2 inches above the highest part of the boiler, the bars laid 9 inches between centres. One course of brick is laid upon those flatwise, and another course is laid upon this course crosswise. A hole must be left for the escaping of the moisture of the drying brickwork. This hole is closed up when the masonry is dry, and I then have about the best jacket for the top of the boiler which can be had, admitting of easy inspection and affording a floor for the men to walk on to do repairing on steam drum and piping, and also to raise the pop safety valve once per day.

The hotter the boiler room the less the loss by radiation of brickwork, which loss has been estimated by some engineers to be 24 per cent. of the heat developed, which certainly is at least 50 per cent. too high. This 24 per cent. loss may be correct for plain cylindrical boilers without return flues, which present a very great masonry surface, and for boilers which are not sufficiently sheltered.

A variety of grates is advocated and used. I find by experience that a rocking grate is the most economical, if correctly constructed. It must work easily under ordinary use for shaking; the spaces must nowhere be enlarged enough to lose coal into the ash pit while shaking ordinarily; it must be of sufficient strength and so powerfully geared as to crush any wedged-in

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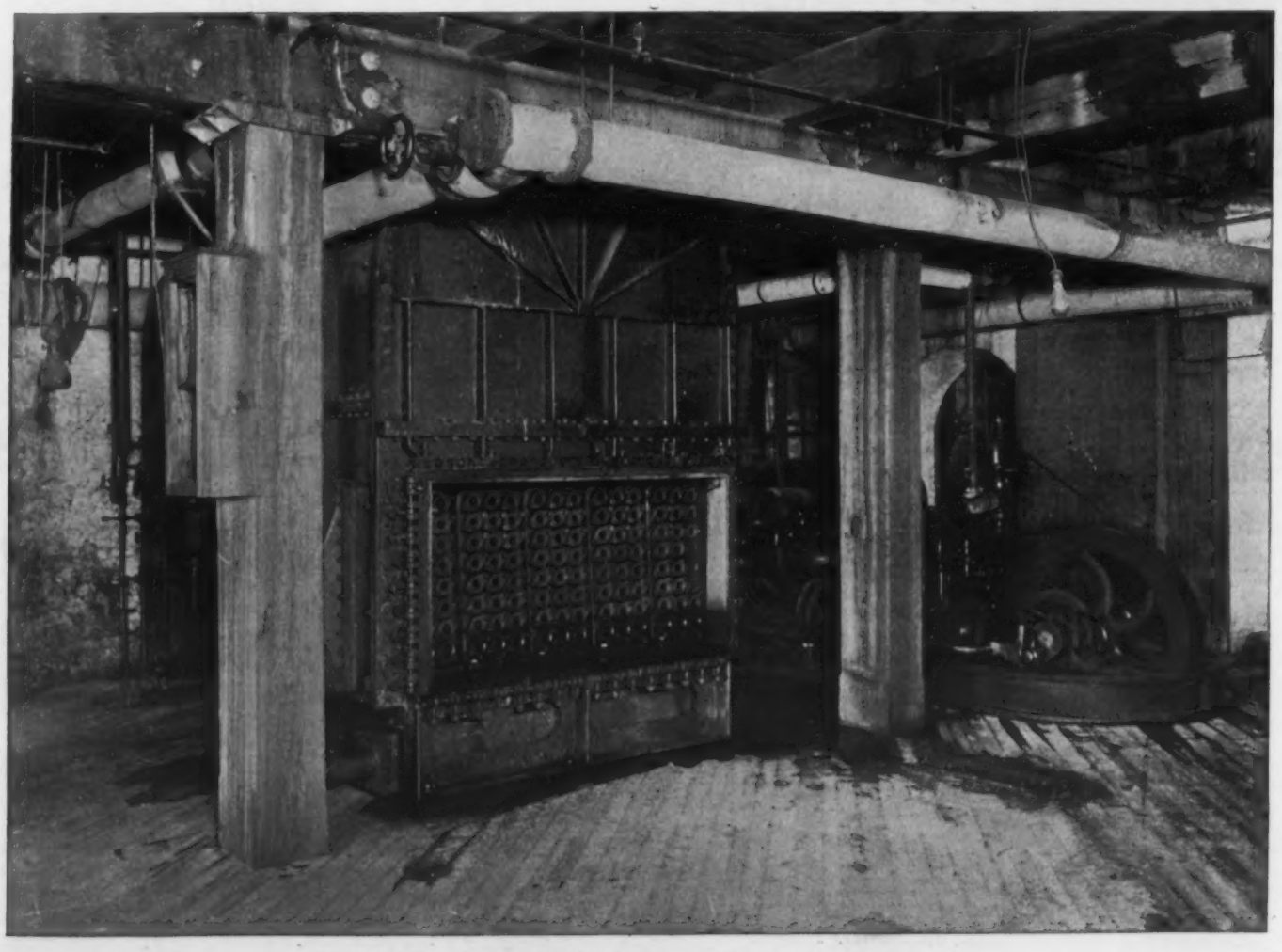

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clinkers without breakage of grate parts; it always must be easily brought back to its regular working position, and no points must protrude into the fire, and thus be likely to burn off in case a careless fireman has not set back the rocking grates correctly. I prefer the rocking grate for small coal.

The self feeding grates are combinations of feeding devices and moving grates. These grates accommodate only small coal, which is put into hoppers before the boiler front; a small engine whose speed is adjusted by the fireman attends to the moving or oscillating of the grate bars, which generally are arranged in step grate fashion. The coal gradually falls and moves forward, gradually getting into hotter regions of the, fire until it is delivered on to the finishing plane, immovable grate, which may be dumped at will. These grates are recommended as smoke burners and savers of coal and firemen. They may be used with great advantage with lightly clinkering coal, when nearly equal production of steam is the rule. The reason of their making less smoke is found in the equal issuing of smoke, always but a little being visible. In case of hand firing the attendants very often, most generally, indeed, shovel in too much coal at one time, then take a quiet nap until the steam drops considerably. During the laying in of so much green coal dense smoke becomes quite conspicuous. This soon tones down to almost nothing, and for quite a while no smoke is seen. If the smoke made by the green coal were evened up, as it is with the constantly fed self feeding grates, only a little would be visible all the time. Of course, a little more smoke may be made by hand firing, and less economy be enjoyed on account of the often repeated opening of the stoke doors. When steam is required in widely varying quantities, self feeding grates cannot well be employed.

Attentive and considerate firemen can do a great deal toward the saving of fuel. I never forgot the test made in a large establishment in Germany, when twelve expert firemen were put in to fire, each one day, for trial against a prize. Coal and water were weighed, and as much as 33 per cent. difference in evaporative work was found. In our plant all water is metered; monthly corrections are made for loss of meters by test meters, and every month the average temperature of feed water, quantity of same and coal fired is computed.

As to the height of the chimney, I say: Make it any height you please, so long as it is at least 100 feet. It is always advisable to have a good high stack, and a heavy, substantial one of brick, too. Ours has a 12 foot hole and is 235 feet high. Iron stacks cool the ascending gases too fast; they are cheap in first cost, but for permanent plants brick stacks are cheapest in the long run. Try to have a good draft; it can be checked, but not increased. Small coal needs more draft than large coal; anthracite more than bituminous.

Oil is not used for fuel to any considerable extent in the South, but I shall have to mention it. The pound of light crude oil has a calorific value or heating effect of about 18,000 B. T. U.; a pound of heavy, jelly-like oil, nearly 20,000 B. T. U. According to this, 1 pound of oil of the average heating value of 19,000 B. T. U. equals 1.727 pounds of coal of the average calorific value of 11,000 B. T. U. Or, 1.157 pounds of oil produce as much heat as 1 ton of bituminous coal—1,157 pounds of oil, or about 2.9 barrels. The useful heat of oil, however, is greater than that of coal, as no loss of heat is incurred by ash; and 2¼ barrels of oil can safely be assumed as equal in useful heat to 1 ton of fair bituminous coal. In some places the oil firing is much cheaper than coal firing. Especially do large boiler plants enjoy quite an advantage by the reduction of crew, firemen, coal passers and ashmen. The oil is atomized by a violent stream of steam or compressed air, and in this finely divided state it is ignited, changed into gas and burned. The jet is directed against a bed of firebrick, whose intense heat tends to heat the gases sufficiently to consume them completely. The cleanliness of the boiler room where oil is burned is remarkable, and of late the reduction of smell has done much toward the more general adoption of the system.

Somebody, when asked what steam was, said: "Steam is water in a state of extreme perspiration." I wish you would be satisfied with this, then I would be done now; but—we have to "fire up again"! Water boils at 212° Fahr.; it changes its aggregate from the liquid to the gaseous; in that state it is called steam. The more pressure there is upon the water the hotter it must be made to change its state. At 100 pounds pressure the water must be heated to 338° Fahr. to boil and change into steam. The change goes on slowly, God be thanked a thousand times! The vessels in which water is evaporated under pressure are called steam boilers. These can be divided into three classes—the boilers with large water hold, the ones with medium and the ones with small water hold.

(To be continued.)

To repair a feed or other water pipe, mix a moderately stiff putty from red and white lead with boiled linseed oil, and work into it some hemp chopped into short lengths; apply it over the crack in a moderately thick mass; then wrap some strips of canvas parceling round the rope tightly, overlapping both ends of the crack, and finish by sewing marline hard over the parceling.—*Power.*

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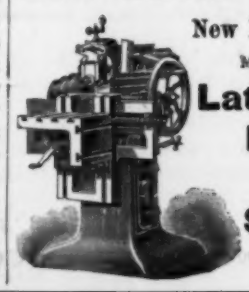
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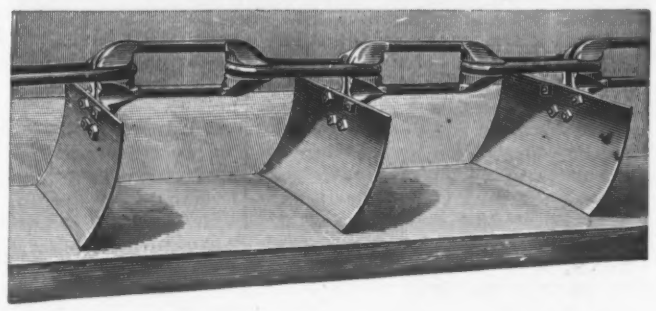
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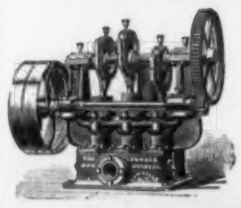
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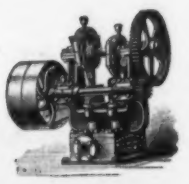
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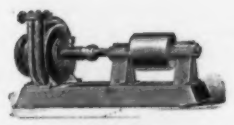
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Sparks Mfg. Co.	Hamburg, N. J.	1	1
Charles Callender	Glendale, Mass.	2	2
Merrimac Paper Co.	Lawrence, Mass.	2	2
Connecticut Paper Co.	Holyoke, Mass.	1	..
Carew Mfg. Co.	South Hadley Falls, Mass.	2	2
Rice, Barton & Fales	Worcester, Mass.	5	2
Eaton, Dikeman & Co.	Lee, Mass.	1	..
Fall Mountain Paper Co.	Bellows Falls, Vt.	13	3
Wyman Flint & Sons	Bellows Falls, Vt.	3	3
National Metal Edge Box Co.	Readsboro, Vt.	1	..
Glen Mfg. Co.	Berlin Falls, N. H.	10	3
Wilder & Co.	Ashland, N. H.	1	..
Umbagog Pulp Co.	Livermore Falls, Me.	2	..
Bangor Paper Co.	Bangor, Me.	4	..
Jay Paper Co.	Jay, Me.	1	..
White & Wells	Waterbury, Conn.	2	2
St. Cloud Paper Co.	St. Cloud, Minn.	1	..
Columbian Paper Co.	Buena Vista, Va.	2	..
Anderson Paper Co.	Anderson, Ind.	3	2
Kaukauna Paper Co.	Kaukauna, Wis.	1	..
Willamette Pulp and Paper Co.	Oregon City, Ore.	13	6
California Paper Co.	Agnew, Cal.	1	..
Tennessee Pulp Co.	Memphis, Tenn.	1	..
Estate of Richard Carter	Glendale, N. Y.	1	..
Charles Wacherhagen	Canaan Four Corners, N. Y.	1	..
Smeallie, Phillips & Co.	Amsterdam, N. Y.	1	..
O. E. Martin	Norwood, N. Y.	1	..
Jefferson Paper Co.	Black River, N. Y.	3	3
St. Lawrence Paper Co.	Dexter, N. Y.	3	3
Payn & Blinn	Chatham, N. Y.	1	..

HOUSES.	CITY AND STATE.	SCREENS.	ORDERS.
M. M. Pillsbury	Napanoch, N. Y.	1	..
Victoria Paper Co.	Fulton, N. Y.	2	2
Philip McGuire	Forestport, N. Y.	1	..
Hartland Paper Co.	Middleport, N. Y.	1	..
Standard Pulp Co.	Jennie s Falls, N. Y.	3	..
Bacon Paper Co.	Lawrence, Mass.	1	..
Watertown Paper Co.	Watertown, N. Y.	3	3
Alpena Sulphite Pulp Co.	Alpena, Mich.	4	2
Hollingsworth & Whitney	Winslow, Me.	4	3
Fulton Paper Co.	Fulton, N. Y.	2	2
Lyonsdale Paper Co.	Lyonsdale, N. Y.	1	..
Newton Pulp Co.	Newton, Nova Scotia	4	..
George Wheelwright Paper Co.	Fitchburg, Mass.	3	..
Lewis, Slocum & Lefevre	Beaver Falls, N. Y.	4	..
Racquette River Pulp Co.	Potsdam, N. Y.	4	3
D. T. Lawless	Penfield, N. Y.	1	..
Green Mountain Pulp Co.	Middlebury, Vt.	3	..
Morgan Falls Pulp Co.	Morgan Falls, Nova Scotia.	4	..
Riordon Paper Mills	Merritton, Ontario.	4	..
Paragon Paper Co.	Eaton, Ind.	1	..
Mount Tom Sulphite Pulp Co.	Mount Tom, Mass.	21	5
Remington Paper Co.	Watertown, N. Y.	8	3
F. E. Robinson	Carthage, N. Y.	2	..
Niagara Paper Mills	Lockport, N. Y.	1	..
Brownville Paper Co.	Brownville, N. Y.	1	..
Indurated Fibre Co. of New Jersey	Lockport, N. Y.	1	..
Cushnoc Fibre Co.	Augusta, Me.	2	..
Adirondack Water Power and Paper Co.	Malone, N. Y.	1	..
Manayunk Paper Co.	Manayunk, Pa.	1	..
C. R. Remington & Son Co.	Watertown, N. Y.	3	2
C. G. Hanbold, Jr.	Chemnitz, Germany	1	..
Sissiboo Falls Pulp Co.	Sissiboo Falls, Nova Scotia.	1	..
Delphos Pulp Co.	Delphos, Ohio.	1	..
Barclay Fibre Co.	Sangerties, N. Y.	3	..
Napanee Pulp and Paper Co.	Napanee, Ontario.	2	..
J. H. Horne & Sons	Lawrence, Mass.	1	..
York Haven Paper Co.	York Haven, Pa.	4	..
Glens Falls Paper Mill Co.	Fort Edward, N. Y.	1	..
J. & J. Rogers Co.	Ausable Forks, N. Y.	1	..
S. D. Warren & Co.	Cumberland Mills, Me.	1	..
Copsecook Mills	Gardiner, Me.	1	..
Manufacturing Investment Co.	Appleton, Wis.	1	..
Carolina Fibre Co.	Hartsville, S. C.	2	..
C. E. Hargrave Sulphite Paper Co.	Hinckley, N. Y.	10	..
Friend & Stebbins Mfg. Co.	West Carrollton, Ohio.	1	..
Centralia Pulp and Water Power Co.	Centralia, Wis.	3	..

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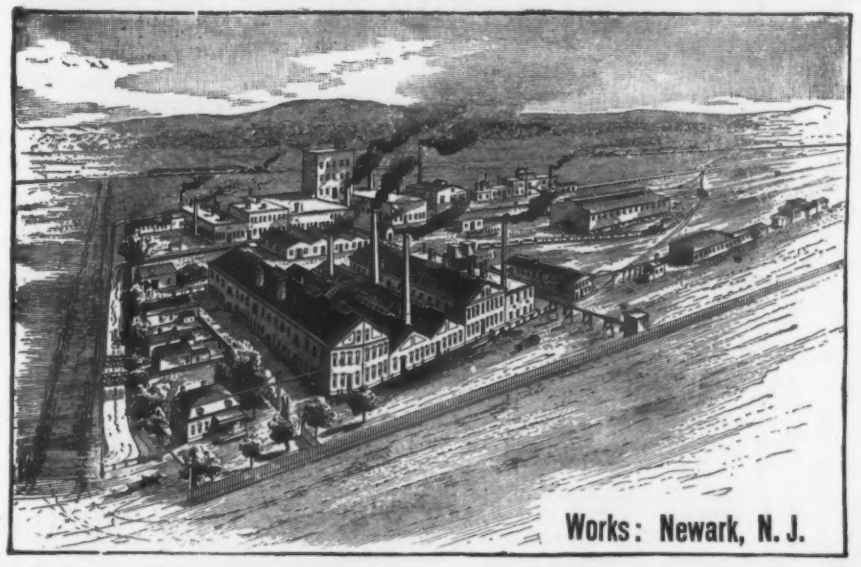
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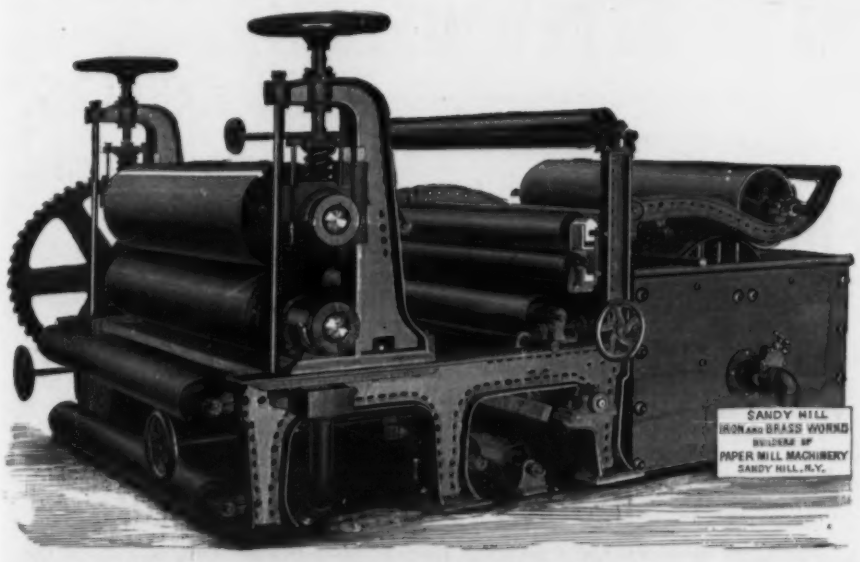

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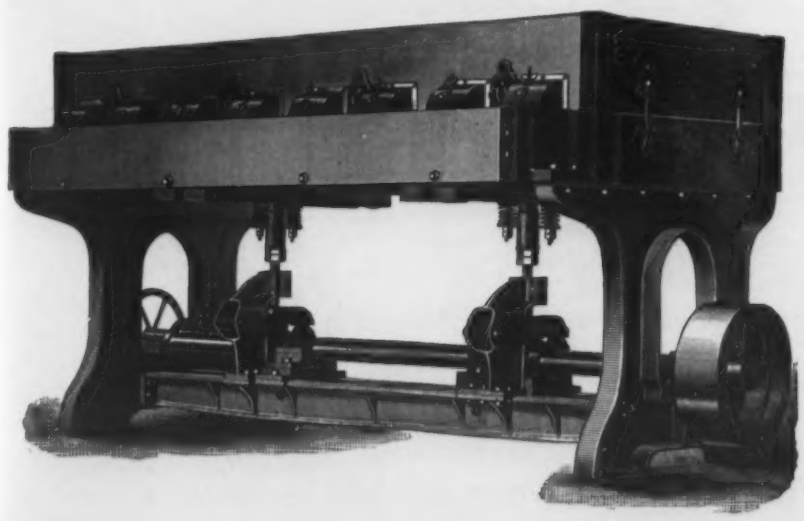

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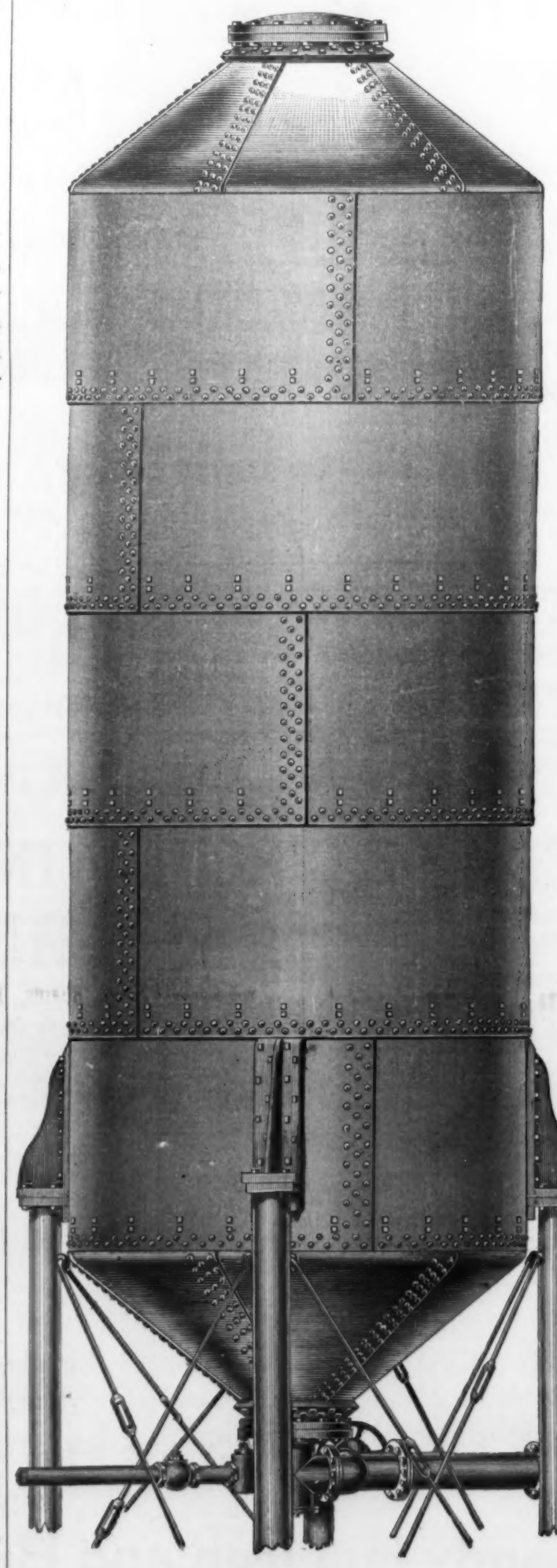

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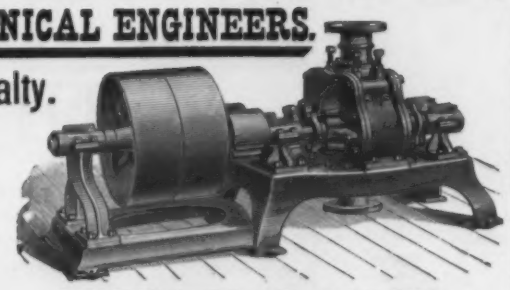

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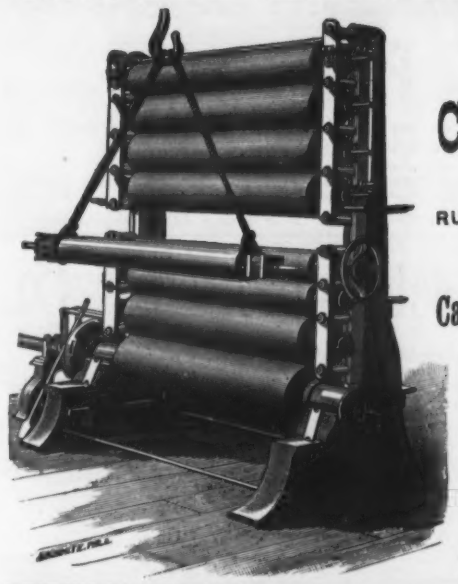

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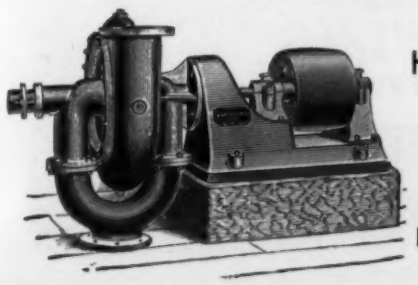

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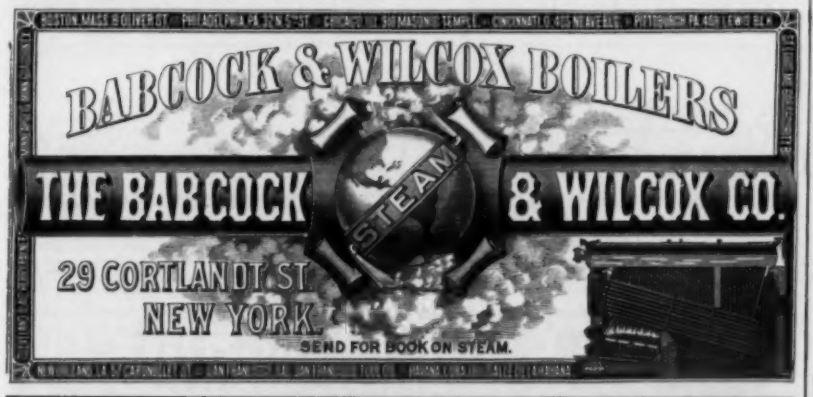

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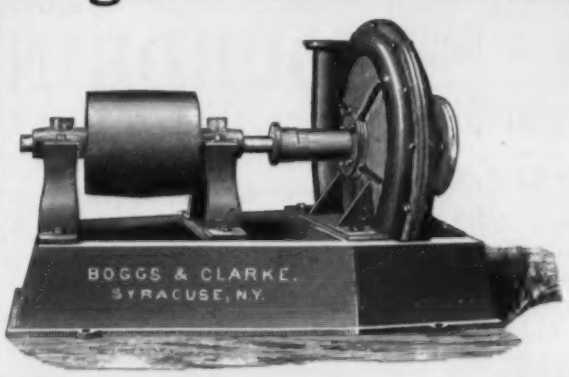

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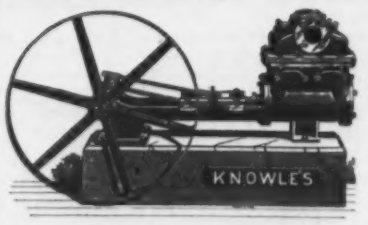

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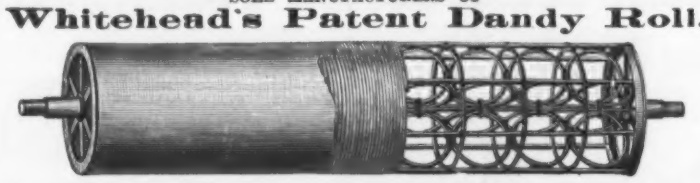

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